

**Report amended on January 13, 2010
pursuant to accuracy and
completeness challenge to Finding 116
and related footnote**

OAH Dkt. No. 12-2500-17037-2
MPUC Dkt. No. ET-6131, ET-2, ET-6130,
ET-10, ET-6444, E-017, ET-9/CN-05-619

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE PUBLIC UTILITIES COMMISSION

In the Matter of the Application of Otter Tail
Power Company and Others for Certification of
Transmission Facilities in Western Minnesota

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FACT, CONCLUSIONS OF LAW,
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Pursuant to the Public Utilities Commission's October 19, 2007, ***Order Recommencing Proceedings in the Office of Administrative Hearings***, an additional public hearing was held on January 10, 2008, in Ortonville and additional evidentiary hearings were held on January 23, 24, and 25, 2008, in St. Paul. Approximately 116 people attended the public hearing. About 40 people offered oral comments, including a number of Applicant's representatives who were available and responded to many of the public's comments and questions. Numerous written comments were also received from interested members of the public.

At the evidentiary hearings, the following persons appeared:

Todd J. Guerrero and David L. Sasseville, Lindquist & Vennum PLLP, 80 South Eighth Street, Suite 4200 IDS Center, Minneapolis, MN 55402, and Peter S. Glaser, Troutman Sanders LLP, 401 Ninth Street, Suite 1000, Washington, DC 20004-2134, appeared on behalf of the Applicants, namely, Otter Tail Power Company, Missouri River Energy Services, Montana-Dakota Utilities, Central Minnesota Municipal Power Agency, and Heartland Consumers Power District. Alan Mitchell of Lindquist & Vennum appeared on behalf of the Applicants at the public hearing in Ortonville.

Julia E. Anderson, Assistant Attorney General, and Linda S. Jensen, Assistant Attorney General, 1400 Bremer Tower, 445 Minnesota Street, St. Paul, Minnesota 55101, appeared on behalf of the Office of Energy Security, Department of Commerce (sometimes, OES or Department).

Elizabeth I. Goodpaster, Minnesota Center for Environmental Advocacy, 26 East Exchange Street, Suite 206, St. Paul, Minnesota 55101, appeared on behalf of the Joint Intervenor, namely, the Minnesota Center for Environmental Advocacy, Union of Concerned Citizens, the Izaak Walton League of America – Midwest Office, Fresh Energy, and Wind on the Wires. Ms. Goodpaster also appeared at the public hearing.

Christopher Sandberg, Lockridge, Grindal Nauen, P.L.L.P., 100 Washington Ave. S., Suite 2200, Minneapolis, Minnesota, 55401, appeared on behalf of the Midwest Independent System Operator (Midwest ISO or MISO).

Christopher Greenman, Assistant General Counsel, Excelsior Energy, Inc., 11100 Wayzata Boulevard, Suite 305, Minnetonka, Minnesota 55305, appeared on behalf of Excelsior Energy, Inc.

David Jacobson, staff member of the Public Utilities Commission (PUC or Commission), Suite 350, 121 Seventh Place East, St. Paul, Minnesota 55101-2147. Mr. Jacobson also appeared at the public hearing.

NOTICE

Under the PUC's Rules of Practice and Procedure, Minn. Rules part 7829.0100 to 7829.3200, exceptions to this Report, if any, by any party adversely affected must be filed within 15 days of the mailing date hereof with the Executive Secretary of the PUC, 350 Metro Square Building, 121 Seventh Place East, St. Paul, Minnesota 55101-2147. Exceptions must be specific, relevant to the matters at issue in this proceeding, and stated and numbered separately. Proposed Findings of Fact, Conclusions, and Order should be included, and copies thereof served upon all parties.

The PUC shall make its determination on the matter of the Certificate of Need and Route Permits after expiration of the period to file Exceptions as set forth above, or after oral argument, if such is requested and had in this matter. In accordance with Minn. Rules part 4400.1900, the PUC shall make a final decision on the Route Permits within 60 days after receipt of this Report.

Notice is hereby given that the PUC may accept, modify, condition, or reject this Report of the Administrative Law Judges and that this Report has no legal effect unless expressly adopted by the PUC.

STATEMENT OF ISSUES

This supplemental proceeding became necessary when two of the original Applicants, Great River Energy (GRE) and Southern Minnesota Municipal Power Agency (SMMPA), withdrew as participants in the Big Stone II generation and transmission projects in September 2007.¹ This change in ownership structure altered key facts underlying the claimed need for the two high voltage transmission lines in Minnesota. In general, however, the remaining Applicants maintain that they still need the transmission lines as previously proposed to transport to them the electricity they need from their proposed Big Stone II generation plant.

¹ App. Ex. 114 at1, lines 11-16 (Uggerud). The hearing exhibit list, with links to the exhibits, is available at <https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=4945370>.

Applicants' claims require the same legal analyses regarding the principal certificate of need statute, Minn. Stat. § 216B.243, and specifically subdivisions 3 and 3a, that occurred in the initial phase of this proceeding, but applied to many new facts. This supplemental proceeding also requires application of recently enacted standards increasing the obligation of utilities to implement energy conservation and demand side management programs under Minn. Stat. § 216B.241, and raising renewable energy standards for utilities under Minn. Stat. § 216B.1691.

In addition, if a Certificate of Need is granted, there is an issue as to whether certain conditions should be attached, as the Office of Energy Security has recommended.

The Administrative Law Judges conclude that the Applicants have not demonstrated compliance with the requirements of Minn. Stat. § 216B.243, subds. 3 and 3a, and that the Commission should not issue a Certificate of Need or Route Permits to the Applicants for the construction and operation of the proposed transmission lines.

The Administrative Law Judges further conclude that if the Commission does issue the Certificate of Need, it should impose the conditions recommended by the Office of Energy Security and issue the Route Permits requested by the Applicants.

Based upon the record, the Administrative Law Judges make the following:

SUPPLEMENTAL FINDINGS OF FACT²

I. Procedural Summary

1. The Initial ALJ Report of August 15, 2007, concluded that the Applicants had demonstrated compliance with the criteria for issuance of a Certificate of Need under Minn. Stat. § 216B.243 and other applicable statutes and Minn. R. 7849.0120, and that the Commission should grant the Certificate of Need (CON) and Route Permits.³

1. On August 31, 2007, a settlement agreement between the Department and the Applicants ("Settlement Agreement") was filed with the Commission.

2. Additional hearings became necessary in this matter when two of the original applicants -- Great River Energy ("GRE") and Southern Minnesota Municipal

² The following Findings, Conclusions, Recommendations, and Memorandum are intended to supplement the Findings, Conclusions, Recommendations, and Memorandum contained in the August 15, 2007, **Findings of Fact, Conclusions of Law, and Recommendation** issued by the undersigned Administrative Law Judges (the Initial ALJ Report). The provisions of this Report shall prevail over any contrary provisions in the Initial ALJ Report.

³ Initial ALJ Report, Recommendation, ¶ 16.

Power Agency ("SMMPA") -- withdrew as participants in the Big Stone II generation and transmission project in September 2007.⁴

3. On January 16, 2008, the South Dakota Supreme Court found that the South Dakota Public Utilities Commission decision, which had concluded that Big Stone II would not pose a threat of serious injury to the environment and granted a permit for Big Stone II, was not clearly erroneous, and affirmed the South Dakota Public Utilities Commission decision.⁵

II. The Big Stone II Project

4. With the withdrawal by GRE and SMMPA, and in light of the practical inability to expedite the process of admitting new participants to the project without drastically protracting the regulatory review process, the remaining five Applicants anticipated that they may have to downsize Big Stone II to optimally fit their resource needs. At the same time, the Applicants wanted to ensure that the plant was large enough to meet their anticipated needs and also take advantage of the economies of scale.⁶

5. Based on additional analyses, the Applicants concluded that either a 500 MW (nominal) unit or a 580 MW (nominal) unit would be an appropriate size for the five utilities.⁷ The original plant was a planned nominal 630 MW supercritical pulverized coal plant.

6. According to information provided to the Department by the Applicants' transmission engineer witnesses, new 115 kV transmission lines instead of the 230 kV lines requested here (with the option to upgrade to 345 kV to handle wind energy output) would only suffice for an outlet from Big Stone II of 150 MW or less. And adding 115 kV lines to the existing 115 kV lines would be more expensive than single 230 kV lines. Thus, for a Big Stone II plant at 500 MW or 580 MW, the least-cost option for the transmission lines would likely be the same 230 kV lines originally requested.⁸ This assertion was not disputed. No other evidence regarding the cost of the transmission lines was presented in the second phase of the proceeding.

7. Since the withdrawal of GRE and SMMPA from the project, there have been six potential partner candidates that have expressed interest in the project with a total interest in Big Stone II participation of 900 MW, or more than five times the total 170 MW share of the two utilities that withdrew from the project last September. These six candidates claim a total baseload need, including their interest in Big Stone II, of up

⁴ App. Ex. 114 at 1 (Uggerud).

⁵ *In the Matter of Otter Tail Power Company on Behalf of Big Stone II Co-Owners for an Energy Conversation Facility Permit for the Construction of the Big Stone II Project*, No. 24485-a-JKK (Jan. 16, 2008).

⁶ App. Ex. 115 at 3, lines 6-10 (Rolfes).

⁷ Exhibit 114 at 2, lines 2-6 (Uggerud).

⁸ DOC Ex. 26 (Information Request No. 105 Response).

to 1,550 MW, or more than nine times the total MW share of the two utilities that withdrew from the project last September.⁹

8. Two entities submitted public comments noting their interest in obtaining some or all of the remaining energy available from Big Stone II. The Nashwauk Public Utility Commission completed a non-binding, non-exclusive expression of interest in participating in the range of 150-200 MW¹⁰ and Babcock & Brown, a builder, owner, and operator of energy assets in the United States and abroad, indicated that it has an interest in acquiring the unsubscribed portion of the Big Stone II plant.¹¹

9. Nothing is known about whether any of the potential participants can demonstrate need in compliance with Minn. Stat. § 216B.243, subds. 3 and 3a, or if the Applicants believe that they would be required to do so.

10. The Applicants do not intend to make a decision to select a one or more new partners until after the Commission's decision in this matter. If the Applicants decide to add one or more new participants, and that change affects the ownership of the associated transmission lines, the Applicants will inform the Commission in accordance with the applicable rules.¹²

III. Conservation and Demand Side Management¹³

11. Minn. Stat. § 216B.243, subd. 3, states, in relevant part:

No proposed large energy facility shall be certified for construction unless the applicant can show that demand for electricity cannot be met more cost effectively through energy conservation and load-management measures and unless the applicant has otherwise justified its need.

12. Minn. Stat. § 216B.243, subd. 3(8), states that when assessing need, the Commission shall evaluate:

... any feasible combination of energy conservation improvements, required under section 216B.241, that can (i) replace part or all of the energy to be provided by the proposed facility, and (ii) compete with it economically . . .

These statutes, which remain unchanged from the time of the initial proceeding, restrict the Commission from granting a certificate of need unless Applicants show their demand for electricity cannot be met at least in part through less expensive energy conservation and load management.

⁹ App. Ex. 124 at 18, lines 1-11 (Uggerud).

¹⁰ Letter from Milt Latvala (Jan. 15, 2008) (Public Ex. 37).

¹¹ Letter from Robert Bergstrom (Jan. 15, 2008) (Public Ex. 35).

¹² App. Ex. 124 at 18, lines 14-21 (Uggerud).

¹³ "Conservation," "Demand Side Management" (DSM), and "Load Management" are not identical concepts, but the terms have sometimes been used to interchangeably in this proceeding.

13. In Minnesota Laws 2007, Ch. 136, Art. 2, § 4, Minnesota's energy conservation standard was changed from a spending goal to an energy savings goal. Specifically, the following policy was adopted and made effective July 1, 2007:

216B.2401 ENERGY CONSERVATION POLICY GOAL.

It is the energy policy of the state of Minnesota to achieve annual energy savings equal to 1.5 percent of annual retail energy sales of electricity and natural gas directly through energy conservation improvement programs and rate design, and indirectly through energy codes and appliance standards, programs designed to transform the market or change consumer behavior, energy savings resulting from efficiency improvements to the utility infrastructure and system, and other efforts to promote energy efficiency and energy conservation.

14. To implement this new energy conservation policy goal, Minnesota Laws 2007, Ch. 136, Art. 2, § 5, amended Minn. Stat. § 216B.241, subd. 1c, to read:

Subd. 1c. Energy-saving goals. (a) The commissioner [of Commerce] shall establish energy-saving goals for energy conservation improvement expenditures and shall evaluate an energy conservation improvement program on how well it meets the goals set.

(b) Each individual utility and association shall have an annual energy-savings goal equivalent to 1.5 percent of gross annual retail energy sales unless modified by the commissioner under paragraph (d). The savings goals must be calculated based on the most recent three-year weather normalized average.

(c) The commissioner must adopt a filing schedule that is designed to have all utilities and associations operating under an energy savings plan by calendar year 2010.

(d) In its energy conservation improvement plan filing, a utility or association may request the commissioner to adjust its annual energy savings percentage goal based on its historical conservation investment experience, customer class makeup, load growth, a conservation potential study, or other factors the commissioner determines warrants an adjustment. The commissioner may not approve a plan that provides for an annual energy savings goal of less than one percent of gross annual retail energy sales from energy conservation improvements. A utility or association may include in its energy conservation plan energy savings from electric utility infrastructure projects approved by the commission under section 216B.1636 or waste heat recovery converted into electricity projects that may count as energy savings in addition to the minimum energy savings goal of at least one percent for energy conservation improvements. Electric utility infrastructure projects must result in

increased energy efficiency greater than that which would have occurred through normal maintenance activity.

(e) An energy savings goal is not satisfied by attaining the revenue expenditure requirements of subdivisions 1a and 1b, but can only be satisfied by meeting the energy savings goal established in this subdivision.

(f) An association or utility is not required to make energy conservation investments to attain the energy savings goals of this subdivision that are not cost-effective even if the investment is necessary to attain the energy savings goals. For the purpose of this paragraph, in determining cost-effectiveness, the commissioner shall consider the costs and benefits to ratepayers, the utility, participants, and society. In addition, the commissioner shall consider the rate at which an association or municipal utility is increasing its energy savings and its expenditures on energy conservation.

(g) On an annual basis, the commissioner shall produce and make publicly available a report on the annual energy savings and estimated carbon dioxide reductions achieved by the energy conservation improvement programs for the two most recent years for which data is available. The commissioner shall report on program performance both in the aggregate and for each entity filing an energy conservation improvement plan for approval or review by the commissioner.

(h) By January 15, 2010, the commissioner shall report to the legislature whether the spending requirements under subdivisions 1a and 1b are necessary to achieve the energy savings goals established in this subdivision.

This statute applies to the Applicants' Minnesota retail load.

15. In the Applicants' view, Paragraph (f) provides for an important "off ramp," so that they are not required to make conservation investments that are not cost-effective. They then present evidence of how difficult it will be for them to meet new 1.5 percent energy savings goal in a cost-effective way.¹⁴

16. The Applicants should not be excused from the 1.5 percent goal in this Certificate of Need proceeding. It provides an appropriate planning goal for energy conservation. It would be contrary to the statute to plan to not meet the goal established by the Legislature, particularly where, as here, new facilities are being built, and particularly where this is one of the very first cases to arise under the new goal. If any of the Applicants need relief from the goal in future years, that can be provided by the Commissioner of Commerce under the new statute. At the beginning of a trip, you plan to stay on the main road and to use "off ramps" only when necessary.

¹⁴ App. Ex. 122 and 130 (Wikler).

17. Moreover, the Applicants overstate the difficulty of attaining the goal and the experience of certain other utilities in that regard. For example, they ignore the indirect methods the statute allows. Examples of indirect means include customers unplugging products that create phantom load even when not in use, manufacturers who provide more efficient machinery, and governmental changes to and enforcement of building codes. Xcel Energy is proposing to meet a substantial part of the new goal, 1.1 percent of sales, with direct impact projects and, contrary to the Applicants' assertions, is continuing to evaluate other methods to achieve the overall 1.5 percent goal.¹⁵

18. The Minnesota Municipal Utilities Association, on behalf of MRES, CMMPA, and Heartland, repeated its earlier argument that the approvals by their own boards of directors and local officials of these municipal utilities' decisions to participate in Big Stone II should be given "appropriate deference."¹⁶ As concluded in the Initial ALJ Report, Minn. Stat. § 216B.243 makes no distinction among utilities that are municipally owned, investor owned, or cooperatively owned. All must conform to the statewide standards set by statute, not their own economic priorities. The statutory language is clear that the burden is on every one of the Applicants to demonstrate that their proposal or a portion of their proposal cannot be replaced more cost-effectively by energy conservation and load management.¹⁷

19. As the Office of Energy Security states, the law expects utilities to achieve the statutory 1.5 percent energy savings goal using both existing and new DSM programs, and direct and indirect methods. While the new energy savings goal is aggressive, it is certainly achievable.¹⁸ More importantly, it has been set by law. In this CON proceeding, the 1.5 percent minimum provides a reasonable standard for determining whether CMMPA, Heartland, MRES, and OTP, as to their Minnesota retail load, demonstrated that the proposed Big Stone II facility could not be more cost-effectively replaced, in whole or in part, by energy conservation and load management.

20. As to the non-Minnesota load of Heartland, Montana-Dakota, MRES, and OTP, the Applicants must at least comply with Minn. Stat. § 216B.243, subd. 3, and show their demand for electricity cannot be met at least in part through less expensive energy conservation and load management. They must reasonably analyze through economic modeling whether conservation or load management is likely to be less expensive than generation.¹⁹

21. Forecasting each of the Applicants' demand for energy is the first step in this process. The Applicants must demonstrate that their basic energy need forecasts

¹⁵ Minn. Stat. § 216B.2401; Tr. Vol. III at 7-9 (C. Davis).

¹⁶ MMUA Ex. 1 (Kegel Testimony).

¹⁷ DOC Ex. 23 at 2 (C. Davis). *See generally*, Initial ALJ Report, Finding 98.

¹⁸ DOC Ex. 23 at 6 (C. Davis).

¹⁹ DOC Ex. 23 at 3-5 (C. Davis).

are reasonable.²⁰ Once that is accomplished, analysis of the conservation requirement can take place. Thereafter, analysis regarding renewable alternatives can take place.

22. It was undisputed and it is found that all the Applicants other than Montana-Dakota demonstrated that their demand forecasts were reasonable.

23. Montana-Dakota did not show that the econometrics model it used for the first time was a valid model. On the contrary, it was “statistically biased.” As the Office of Energy Security testified, it was flawed because it included price in the demand model, which cannot be determined without knowing the supply. The model incorrectly allows demand alone to determine the equilibrium quantity of goods and price.²¹ The Applicants argue that Office of Energy Security’s opinion should not be credited because OES could not identify the magnitude or direction of the error in Montana-Dakota’s model. That might have provided additional proof, but that was not OES’s burden. The error was in Montana-Dakota’s modeling.

24. The Applicants argue that Montana-Dakota’s past forecasts have been accurate. That claim was not well proved, but even assuming its truth, it is largely irrelevant because Montana-Dakota used a new statistical model in this proceeding.²²

25. Since Montana-Dakota has not demonstrated the reasonableness of its forecasts, it cannot demonstrate compliance with the requirements of Minn. Stat. § 216B.243, subds. 3 and 3a.

26. It is undisputed and it is hereby found that CMMPA, MRES, and OTP demonstrated that their need cannot be met more cost effectively by conservation and load management as required by Minn. Stat. § 216B.243, subd. 3. However, neither Heartland nor Montana-Dakota made the required showing.

27. Heartland did modeling, but did not adequately show that its model allowed energy conservation to compete to serve the load. Similarly, Montana-Dakota did modeling, but like Heartland failed to show how conservation could compete in the model with supply-side resources to serve its need.²³

28. The Applicants suggest that the Department’s criticisms and concerns about Montana-Dakota, which serves no load in Minnesota, and Heartland, which services only six (of 33) customers in Minnesota, are insufficient to call into serious doubt the Applicants’ need for the transmission facilities that are the subject of this CON application. They ask the Administrative Law Judges to confirm the following statement made in Finding 149 of the Initial ALJ Report:

[t]he fact remains that the Applicants will have a large demand for baseload energy and capacity in 2011-2012 that can be alleviated only to

²⁰ Ex. 24 at 1 (Ham).

²¹ DOC Ex. 24 at 7-8 (Ham).

²² Tr. Vol. III at 29-30 (Ham).

²³ DOC Ex. 23 at 20-24 (C. Davis); Tr. Vol. III at 11-13 (C. Davis).

a relatively small degree by additional energy conservation. It appears that even if the Applicants become very aggressive about energy conservation over the next four or five years, they will still need the energy and capacity produced by Big Stone II.²⁴

29. It is worth restating the full context of that excerpt from the Initial ALJ Report. Findings 148 and 149 stated:

148. The Applicants presented a considerable amount of evidence attempting to rebut the evidence presented by Woolf and C. Davis. Most of the Applicants have expert staff to do their conservation methods investigation and resource modeling, and those staff testified believably. As witnesses usually are, they were biased in favor of their own work. On the other hand, Woolf has biases in favor of energy conservation, and some of his methods somewhat overstated his results in that direction. C. Davis was the most objective and his analysis was the most credible. His results were likely the most accurate. The Applicants other than SMMPA should have been more aggressive in allowing their models to consider amounts of energy conservation and DSM that have been achieved by other utilities.

149. While the studies done by all the Applicants other than SMMPA were inadequate to rely upon for solid numbers, the fact remains that the Applicants will have a large demand for baseload energy and capacity in 2011-2012 that can be alleviated only to a relatively small degree by additional energy conservation. It appears that even if the Applicants become very aggressive about energy conservation and reduce their needs even by 15 to 20 percent over the next four or five years, they will still need the energy and capacity produced by Big Stone II.

30. C. Davis is vigorous about conservation, but his analysis remains the most persuasive. The studies done by Montana-Dakota in particular, and Heartland to a lesser extent, remain inadequate to demonstrate compliance with the conservation showing required under Minn. Stat. § 216B.243, subd. 3. Moreover, as discussed in the Memorandum below, the changed circumstances do not justify the granting of leeway to the Applicants. For example, on this particular issue, there are now fewer Applicants, so the deficiencies of one or two are of more significance in regard to total demand. The passage of time and the findings in the Initial ALJ Report, along with dialog with the Office of Energy Security, gave Montana-Dakota and Heartland adequate opportunity to fix the conservation analysis inadequacies that were pointed out to them; the other Applicants did so. Most importantly, the facts supporting Applicants' need for the amount of energy they claim and the difficulty of improving conservation are not as persuasive as they appeared in the initial proceeding. Finding 149 in the Initial ALJ Report is no longer accurate.

²⁴ Applicants' Proposed Findings of Fact, Finding 391.

31. The Commission and the Legislature have established conservation and demand side management as a priority and conservation is to be preferred to construction of new generating facilities. That priority has recently been strengthened. An applicant for a certificate of need must show that future demand for electricity cannot be reduced in a more cost-effective way through conservation and demand side management savings.

32. The Applicants as a whole have not shown that their demand for electricity cannot be met at least in part more cost effectively through conservation and DSM.

IV. Renewable Energy Alternatives

Renewable Energy Standards

33. Because a material portion of the electricity that will be transported over the Big Stone transmission lines will come from Big Stone II—a nonrenewable energy source—the Commission is required under Minn. Stat. §§ 216B.243, subd. 3a, to determine whether the Applicants have shown to the Commission's satisfaction that they have explored the possibility of obtaining power from renewable energy sources and demonstrated that Big Stone II is less expensive (considering environmental costs) than power generated by renewable energy sources. This requirement applies to all the Applicants.

34. Those Applicants with Minnesota load are also subject to renewable energy standards (RES) in Minn. Stat. § 216B.1691. While less than half of the output of Big Stone II will now serve Minnesota electric loads, four of the five Applicants have at least some Minnesota load. The 2007 Legislature amended Minn. Stat. § 216B.1691 increasing the amount of renewable energy that such electric utilities must use as part their retail electric service provision of Minnesota load. They now must generate electricity, or procure electricity, generated by renewable energy methods constituting at least 12 percent of their retail sales in 2012. That percentage increases in steps to 25 percent in 2025. In addition, a new provision has been added that allows the Commission to modify or delay the renewable energy requirements in certain hardship situations.²⁵

35. Capacity expansion modeling is the preferred method for identifying least-cost resource options under a variety of assumptions. Therefore, it is the preferred method for determining whether Big Stone II is less expensive (considering environmental costs) than power generated by renewable energy sources. Only such a model can fully inform the decision-makers as to the cost of the choices being evaluated.²⁶

36. After GRE and SMMPA withdrew from the Big Stone II project, each of the five remaining Applicants conducted further analysis of whether Big Stone II remained

²⁵ Minnesota Laws 2007, Ch. 3.

²⁶ DOC Ex. 20 at 3 (Rakow).

their least-cost alternative for meeting upcoming needs.²⁷ Each of the Applicants presented testimony from its resource planners who conducted the modeling, each of whom are well experienced in conducting resource planning. CMMPA, Montana-Dakota, and MRES used the Strategist capacity expansion model, which is the preferable model. It is very expensive to purchase, but consultants with access to Strategist are available to utilities. OTP has obtained Strategist, but is still in the process of changing over to it. In this case OTP used its old IRP-Manager capacity expansion model. Over the years, IRP-Manager had been modified to several of OTP's specific needs and OTP's resource planner had become very familiar with it.²⁸ Because of severe budgetary constraints, Heartland does not use a capacity expansion model.

37. The Applicants claim that they have demonstrated a total need from Big Stone II starting in 2013 (the first year of operation) ranging from 531 to 556 MW. That includes 170 MW for OTP, 160-175 MW for MRES including HUC, 131 MW for Montana-Dakota, 30 MW for Heartland, and 40-50 MW for CMMPA.²⁹ In addition, the Applicants point to a looming generation capacity deficit in the region as demonstrating additional need for Big Stone II.³⁰

38. The Department obtained the Strategist model in late fall 2007. Joint Intervenor's consultant Synapse obtained the Strategist model in September 2007. The Department staff and Synapse both conducted modeling runs modifying some of the Applicants' runs with different inputs. Witnesses Steve Rakow of the Department and David Schlissel of Synapse are well qualified to analyze and comment on the Applicants' resource planning and modeling. Both have the experience and education to do so, as they have done for several years without having Strategist directly available to them. Rather, they have had utilities modify their Strategist runs. Having Strategist directly available makes it possible for them to do more analyses more quickly and thoroughly. Both have knowledge of industry-wide practices and requirements and informed themselves on the necessary particulars of each of the Applicants.

39. Certainly each of the Applicants' resource planners has more extensive knowledge of their employer's particular situation than do Dr. Rakow or Mr. Schlissel. But that does not necessarily make them more credible experts on capital costs, CO2 costs, or other inputs that do not particularly relate to their employer, or on operation of capacity expansion models.

40. Noting that neither the Department³¹ nor the Joint Intervenor's³² presented a specific alternative to Big Stone II and the transmission lines, the Applicants argue

²⁷ See App. Ex. 115 at 3, lines 6-10 (Rolfes).

²⁸ App. Ex. 131D at 19-20 (Morlock).

²⁹ See App. Ex. 131A (Morlock).

³⁰ See Initial ALJ Report ¶ 111.

³¹ "I wish to clarify for the record that the Department did not propose any alternatives in its modeling or at any point on the record of this proceeding." DOC Ex. 27 at 14 (Rakow).

³² JI Ex. 35 at 10, lines 5-8 ("I am recommending that the Applicants investigate and implement portfolios of alternatives to the Big Stone II Project that would include energy efficiency, more renewable resources, and, to the most limited extent necessary, the addition of new natural gas-fired capacity.")

that the question here is not whether there is some theoretical, undefined combination of wind and natural gas, along with more conservation, that could replace Big Stone II at a lower cost. The Applicants may be correct, but nobody but them has suggested that that is the question here. The relevant question on this issue is whether the Applicants have demonstrated by a preponderance of the evidence that Big Stone II is less expensive than renewable alternatives. If the Department's evidence, the Joint Intervenor's evidence, or other evidence shows defects in the Applicants' modeling, it may be found that the Applicants have failed to meet their burden.

41. The first step in analyzing renewable alternatives requirement is to verify that the capacity expansion models are set up to allow the required amount of renewable energy to be selected if appropriate. The four Applicants with at least some Minnesota load incorporated the new renewable energy standards into their resource planning models. Each assumed that it would meet the 25 percent renewable standard by 2025 and determined its least-cost resource plan with that assumption in place. Thus, the Applicants with Minnesota retail load included the required quantity of renewable energy in their capacity expansion models.³³

42. CMMPA's load is entirely in Minnesota, so CMMPA assumed that the RES applied to its entire load. CMMPA took into account existing and planned renewable resources and then added wind to meet the RES milestones. The model for CMMPA selected 20 MW to 80MW of additional wind above and beyond the RES, depending on the scenario examined.³⁴

43. Presently, six of Heartland's 33 customers are in Minnesota. About 67% of Heartland's load is in Minnesota, but beginning in 2016, its Minnesota load is expected to drop to less than 50% of Heartland's total load. Heartland does not have a capacity expansion model and used the same production cost analyses in this phase that it used in the initial phase of this proceeding.³⁵ Heartland has executed an agreement to purchase renewable energy beginning in 2009 that is intended to meet the Minnesota RES for Heartland's customers in Minnesota.³⁶

44. The new RES mandate had little impact on MRES's least-cost resource plan because MRES was planning to meet Minnesota's RES all along. Some additional wind was added primarily because the planning horizon was extended out an additional five years.³⁷

45. OTP also found that the RES made little difference in its least-cost resource plan because OTP already had plans to obtain significant quantities of renewable energy. Even with the RES, OTP found that it had a need for additional

³³ DOC Ex. 20 at 23 (Rakow); Tr. Vol. III at 42-43 (Rakow).

³⁴ App. Ex. 117 at 11-12 and App. Ex. 117G (Robert Davis).

³⁵ See App. Ex. 21 and App. Ex. 59 (Knofczynski).

³⁶ App. Ex. 120 at 8, lines 6-8 (Knofczynski).

³⁷ App. Ex. 118 at 28 (Schumacher).

baseload generating capacity.³⁸ The modeling showed that OTP would need some additional renewables in later years.³⁹

46. Montana-Dakota serves no load in Minnesota and is not subject to the renewable energy standard requirements of Minn. Stat. § 216B.1691. It was not inappropriate for it not to use 25 percent renewables by 2025. It did include a Montana wind project and allowed its model to pick additional renewables, modeled as wind, as part of its least-cost resource plan, up to 40% of the utility's peak demand by 2015.⁴⁰

47. All the Applicants who were required to do so included the required quantity of renewable energy in their studies.

Modeling of Renewable Alternatives

Carbon Regulation Costs

48. Regulations imposing a financial cost on carbon dioxide emissions are very likely to be adopted within the next few years. Future CO₂ restrictions are likely to add substantially to the cost of energy from all fossil fuel sources, including the Applicants' existing coal plants and the new Big Stone II coal plant. A federal policy response to global warming now appears very likely. Bills are under consideration by the U.S. Congress that would place new costs on carbon dioxide emissions from coal plants. Increasingly, prudent utilities are factoring estimates of the costs they may face under federal carbon constraints into their resource planning. Regulators and lenders are beginning to require them to do so.⁴¹

49. In this case there is no dispute that in modeling the relative costs of generation alternatives, one important factor is the possibility of a carbon tax or other cost imposed on fossil-fuel-burning facilities such as Big Stone II for emissions of carbon dioxide. The disputed issue is the level of that cost. The Applicants seek lower costs to make Big Stone II appear more economical; the Joint Intervenors seek higher costs to make conservation and renewable alternatives appear more economical. The OES did not endorse any particular cost or range of costs for this proceeding, but instead urged the Applicants to test different cost assumptions.

50. The four Applicants with Minnesota customers all modeled a cost of \$9/ton for every ton of carbon dioxide to be emitted from Big Stone II, regardless of where (i.e., in what State) the Big Stone II output would be consumed. Additional modeling was done in a few cases.

51. The Applicants claim that the \$9/ton figure came from a recommendation that the Department made to the Commission in *In the Matter of Establishing an Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation*

³⁸ App. Ex. 116 at 19-20 (Morlock); App. Ex. 131A (Morlock).

³⁹ App. Ex. 116 at 13 (Morlock).

⁴⁰ App. Ex. 119 at 7-8 (Heidell).

⁴¹ JI Ex. 35 at 28, 31-33.

*Under Minnesota Statutes § 216H.06.*⁴² But, in fact, the Department had supported a range from \$9/ton to \$30/ton; a number of utilities supported an estimate of \$9/ton, other utilities including OTP supported using \$9/ton as the upper bound, Xcel supported using \$9/ton to \$40/ton, and the “Environmental Intervenors” cited studies supporting a range of anticipated costs from \$7/ton to more than \$50/ton. Later, on December 21, 2007, the Commission issued its *Order Establishing Estimate of Future Carbon Dioxide Regulation Costs*, which estimated that CO₂ regulation of electricity generation will cost between \$4/ton and \$30/ton for CO₂ emitted in 2012 and thereafter, and ordered that “electric utilities shall apply these estimates in all proceedings to acquire electricity generation resources to serve needs in Minnesota.”⁴³

52. The Applicants presented expert testimony that a \$5-\$10/ton carbon cost is reasonable. That testimony was not credible. It would be accurate only in the currently unlikely event that no carbon regulation is ever enacted. For one thing, it ignores the cost for adding carbon capture and sequestration (CCS) technology to coal plants when it becomes available. Capital costs will increase and the net output of a coal-fired plant with CCS will decrease significantly when the CCS equipment is installed and operated, causing a corresponding increase in the price of energy from the plant. Credible studies indicate CCS costs from \$41/metric ton to \$75/metric ton.⁴⁴

53. The Applicants’ modeling using the \$9/ton value was deficient in several ways. First, it was too low. It was a value that they and some other utilities had recommended to the Commission. Most of the recommended values, and studies, exceeded that amount. Second, they did not increase the value over time in their models, which is unreasonable because the price would not hold its value constant in real terms.⁴⁵ Lastly, the Applicants failed to apply a range of costs up to \$30/ton as required by the *Order Establishing Estimate of Future Carbon Dioxide Regulation Costs*, and as recommended to them during this proceeding by OES. The Applicants had time to do so during the pendency of the second phase of this proceeding.

54. The Applicants argue that their \$9/ton on every ton of CO₂ emitted value is equivalent to an \$18/ton CO₂ allowance price on half of the Big Stone II CO₂ emissions, which is a possibility under the Lieberman-Warner bill that is pending. But that possibility is very speculative. The language may not survive; the bill may never pass. The allowances proposed may be limited or distributed to other facilities. Moreover, the calculation is not just a matter of dividing by two.⁴⁶ The Applicants cannot be considered to have used a CO₂ cost of \$18/ton in their modeling.

55. Montana-Dakota did not attach a cost for carbon dioxide emissions because Montana-Dakota has no Minnesota customers. It did so relying on North Dakota law that expressly precludes the company from including such costs in its

⁴² Applicants’ Brief at 32.

⁴³ Order Establishing Estimate of Future Carbon Dioxide Regulation Costs, MPUC Docket No. E-999/CI-07-1199 (December 21, 2007).

⁴⁴ JI Exs. 41 and 47; Tr. Vol. 1 at 123-127.

⁴⁵ DOC Ex. 21 at 3; JI Ex. 35 p. 27-32.

⁴⁶ App. Ex. 128 at 10-12; JI Ex. 46 at 1.

resource planning models and the carbon dioxide value of zero previously set by the Commission for out-of-state power plants.⁴⁷

56. After the *Order Establishing Estimate of Future Carbon Dioxide Regulation Cost*, and during the pendency of this case, the Applicants asked Burns & McDonnell to conduct a levelized cost analysis to determine the sensitivity of Big Stone II to future carbon costs. Burns & McDonnell looked at the impact on the busbar cost of electricity from several different sizes of supercritical coal plants and combined cycle natural gas plants at costs between \$4 and \$30 per ton.⁴⁸

57. Burns & McDonnell reported that the “cross-over” point at which a hypothetical natural gas/wind combination became lower cost than Big Stone II for the municipal Applicants (CMMPA, MRES, and Heartland) was always above \$30/ton. For investor-owned utilities like OTP and Montana-Dakota, the cross-over point could be as low as \$17/ton, but with more realistic assumptions regarding wind and natural gas, that figure also was above \$30/ton.⁴⁹

58. The Burns & McDonnell analysis is not a capacity expansion model and does not show that Big Stone II is a lower cost option than DSM or renewable energy alternatives. It compares dollars per megawatt-hour of busbar costs of dissimilar projects and fails to evaluate the overall, integrated, impact of the costs and benefits that a single resource can have on other resources. It provides only limited information on how any particular resource matches up with the Applicants’ existing resource mix, existing load requirements, or the electrical system in total. It does not provide a basis for a renewable preference decision.⁵⁰

59. As discussed below, Synapse reran several of the Applicant’s models with higher and more reasonable estimates of future CO2 costs. Those costs substantially reduced the models’ choices of the Big Stone II project over renewable alternatives.

Capital Cost for Big Stone II.

60. In order to make a comparison of the relative costs of alternative technologies, it is necessary to include in the models the estimated costs of a supercritical pulverized coal plant of the size of Big Stone II. The Applicants estimated the cost of a 500 MW Big Stone II facility by starting with the cost estimates that Black & Veatch provided in late summer of 2006 and applying an allocation formula developed by the Electric Power Research Institute (EPRI) to calculate the cost of the smaller unit. The Applicants then applied an overall 6% escalation factor to account for the delay in the expected in-service date.⁵¹

⁴⁷ Order Affirming in Part and Modifying in Part Order Establishing Environmental Cost Values, Docket No. E-999/CI-93-583, at 3-5 (July 2, 1997); Order Establishing Estimate of Future Carbon Dioxide Regulation Costs, MPUC Docket No. E-999/CI-07-1199.

⁴⁸ App. Ex. 121 (Greig).

⁴⁹ *Id.*

⁵⁰ Tr. Vol. I at 34:1-20; JI Ex. 3-K. DOC Ex. 22 at 7.

⁵¹ App. Ex. 115 at 5, lines 12-14 (Rolfes).

61. Using this formula, the Applicants estimated that a 500 MW Big Stone II facility would cost \$1.272 billion in nominal dollars, for a 2013 in-service date, not including the cost of transmission.⁵²

62. The Applicants did not ask Black & Veatch to update the detailed capital budget it prepared around August 2006 because the Applicants were confident in the estimate they made and because the Applicants still remained uncertain about the timing of the necessary permits for the Big Stone Project.⁵³ As a practical matter, the Applicants were not willing to make the investments necessary to obtain pricing estimates until current permitting uncertainties are resolved. The Applicants will obtain a formal update of the costs once the permits are obtained. In addition, the Applicants have found some softening of labor and commodity costs recently that provide some indication that prices are not rising dramatically at this point.⁵⁴

63. On the other hand, some evidence does indicate some potential for larger construction cost increases than the six percent. For example, the Applicants' vendor for the boiler, a major portion of the cost of the plant, informed the Applicants that the price for the boiler had escalated significantly more than six percent.⁵⁵ Similarly, Black & Veatch, the Big Stone II project engineering firm, has warned Applicants of the likelihood of continued high construction costs and delayed construction schedules.⁵⁶

64. Another factor that affects the modeling results is the in-service date. The Applicants are planning for an in-service date for Big Stone II in the summer of 2013.⁵⁷ This schedule assumes that the Minnesota PUC will issue a Certificate of Need in spring 2008 and that construction will take roughly 62 months.⁵⁸ That date is somewhat tenuous.

65. The Office of Energy Security is uncertain about the capital cost and suggests that a condition be imposed to limit cost recovery by OTP (the only rate-regulated Applicant) in future rates if the estimate is exceeded.

66. The six percent inflation factor on the estimated cost of Big Stone II used by the Applicants in their modeling was overly conservative. In those models where other deficiencies existed that unreasonably biased the models toward selecting Big Stone II over alternatives, the results were not sufficiently reliable to demonstrate that Big Stone II is less expensive than renewable energy sources.

⁵² *Id.* at 4 (Rolfes). The cost of the transmission lines is also increasing due to inflationary pressures, estimated to be 6% per year. The earlier estimate was that the transmission lines, with an in-service date in 2011, would cost 238 million dollars. See Initial ALJ Report ¶ 176.

⁵³ App. Ex. 115 at 6, lines 5-16 (Rolfes).

⁵⁴ App. Ex. 125 at 4 (Rolfes).

⁵⁵ JI Ex. 40; Tr. Vol. 1 at 76-77.

⁵⁶ JI Ex. 35 at 54-55.

⁵⁷ App. Ex. 115 at 2 (Rolfes).

⁵⁸ *Id.* at 2, lines 14-27.

CMPMPA

67. CMPMPA believes it needs low-cost, baseload energy to replace the higher cost market purchases and diesel-fired generation on which now depends. It suggests that 40 to 50 MW from Big Stone II would be an economic component of a least-cost resource expansion plan for CMPMPA that also includes additional wind and conservation savings.⁵⁹

68. There were significant failures in CMPMPA's modeling. Primarily, CMPMPA's Strategist results discarded "viable" potentially least-cost options. This means that it cannot be found that Big Stone II is the least-cost option. When asked by Dr. Rakow to address the issue, CMPMPA's resource planner responded simply that no model can test "all possible combinations." But, as Dr. Rakow noted, "It is not necessary to explore all potential combinations, only reasonable combinations." Moreover, MRES successfully remedied a similar problem, which shows that the Strategist model itself is not flawed, but that the modelers can and should address the problem.⁶⁰

69. Synapse developed low, medium, and high CO2 forecast price values for Big Stone II at 500 MW and at 580 MW. Its low value for the 500 MW plant is \$24 in 2015 and increasing in subsequent years. Other than the inflation factor, this value is within the range estimated by the Commission.

70. If CMPMPA's modeling assumptions are adjusted to consider the lowest Synapse CO2 value instead of \$9/ton, Strategist selects only 21 MW of Big Stone II, as compared to CMPMPA's proposed share of 40 MW. If, as Synapse suggests, the model is further adjusted to assume a 10% increase in capital costs for Big Stone II instead of 6%, Strategist selects only 10.5 MW of Big Stone II.⁶¹

71. CMPMPA has not demonstrated that any particular amount of baseload from Big Stone II is less expensive than renewable sources.

Heartland

72. Heartland believes its modeling showed that increasing its share of Big Stone II from 25 MW to 30 MW is the preferred low-cost option to meet its future need.⁶²

73. Heartland did not use a capacity expansion model and, therefore, could perform only limited testing to determine whether its claimed need could be met less expensively by baseload Big Stone II generation than by renewables. For this reason,

⁵⁹ App. Ex. 117 at 16-17 (R. Davis).

⁶⁰ App. Ex. 132 at 4 (R. Davis); DOC Ex. 27 at 6-8 (Rakow)

⁶¹ JI Ex. 35 at 72, Table 8.

⁶² App. Ex. 120 at 13-15 (Knofczyinski).

Heartland failed to demonstrate that any particular share of Big Stone II is either needed or preferred to renewables and conservation.⁶³

Montana-Dakota

74. Montana-Dakota claims that its Strategist modeling showed that it should increase its share of Big Stone II from the 116 MW initially sought in 2006 to 131 MW. It admits that renewable alternative plans involving large amounts of wind and natural gas have total study period costs within one percent of its least-cost plan, but claims wind and natural gas should not be selected Montana-Dakota has not had an opportunity to assess whether a wind and natural gas plan would be practical..⁶⁴

75. As previously found, Montana-Dakota failed to demonstrate that its demand forecast was reasonable and failed to show that conservation would be more expensive than energy from Big Stone II. Regarding the requirement to compare renewable alternatives, Montana-Dakota's modeling failed to include any emissions data. Thus, in OES's opinion, no valid conclusions can be drawn from Montana-Dakota's modeling results.⁶⁵

76. Synapse re-ran Strategist with Montana-Dakota's inputs, but added in the Applicants' suggested CO2 cost of \$9/ton, except that it escalated it 2.5% per year for inflation. Strategist picked zero megawatts of Big Stone II. Synapse re-ran Montana-Dakota's data using a 10% inflation factor on capital cost for the Big Stone II Project, with no CO2 cost value, and Strategist picked zero megawatts of Big Stone II. In scenarios where Strategist selects no amount of Big Stone II, the model adds natural gas combustion turbines operated as peaking units and additional amounts of windpower.⁶⁶

77. Synapse also confirmed Montana-Dakota's admission that its modeling showed that natural gas and wind were "competitively priced" with Big Stone II. The alternatives were 0.56 % more expensive than Big Stone II over the study period (including end effects) and 5% less expensive than Big Stone II over the shorter planning period.⁶⁷

78. Montana-Dakota is located in North Dakota and has no customers in Minnesota. North Dakota law precludes Montana-Dakota from factoring in carbon costs in its resource planning. But, Montana-Dakota is not in this proceeding doing resource planning in North Dakota. It is here requesting a Certificate of Need for a transmission line in Minnesota, which it claims it requires to transport 131 MW of electricity it needs from Big Stone II. As such, it is subject to the requirements of Minnesota law for such a Certificate of Need. It is required to prove that it accurately determined its demand for the 131 MW it claims, that none of that demand can be reduced by more conservation

⁶³ DOC Exs. 20 at 14 (Rakow) and 27 at 8, 16 (Rakow).

⁶⁴ App. Ex. 119 at 13-14 (Heidell).

⁶⁵ DOC Ex. 27 at 8, 16 (Rakow).

⁶⁶ JI Ex. 35 at 82.

⁶⁷ JI Ex. 35 at 78.

or load management, and, at this point, that none of it can be obtained more economically from renewable alternatives. Montana-Dakota has carried none of its burdens.

MRES

79. MRES modeled its own resource needs and the needs of Hutchinson Utilities Commission, to which it provides energy under a contract. MRES's capacity expansion modeling was reasonably done with appropriate inputs. It demonstrated a need for Big Stone II as part of the least-cost mix for MRES and HUC. For MRES, the least-cost plan calls for a minimum of 120 MW from Big Stone II. HUC requires at least 25 MW from Big Stone II.⁶⁸

80. The Office of Energy Security reviewed MRES's modeling, raised several issues with MRES, and ultimately concluded that MRES had demonstrated that baseload energy was needed as claimed for MRES and HUC and that meeting the need with non-renewable versus renewable energy sources will be less expensive.⁶⁹

81. Joint Intervenor's consultant Synapse was able to do only a very few reruns of MRES's modeling and was not able to show significant deficiencies in that modeling. Strategist modeling scenarios using Synapse estimates of the low CO2 cost value and a capital cost increase of 10% still show the MRES need for 120 MW from Big Stone II. In a modeling scenario in which Synapse's mid-case CO2 costs and a ten percent increase in the capital cost of Big Stone II were used, Strategist chose 60 MW, a lesser amount.⁷⁰ The Synapse low CO2 cost value is a reasonable value to use in this proceeding.

82. MRES satisfactorily demonstrated its need for 120 MW from Big Stone II and HUC's need for 25 MW from Big Stone II, that it explored the possibility of obtaining power from renewable energy sources, and that Big Stone II is less expensive (considering environmental costs) than power generated by renewable energy sources.

OTP

83. Because OTP used the IRP Manager capacity expansion model, the Office of Energy Security and Synapse could not fully test the reasonableness of OTP's modeling. They could not simply import the IRP Manager input into Strategist. As OTP was experiencing itself with converting to Strategist, it is necessary to develop an entire database of inputs in Strategist's format, a time-consuming process. OTP was responsive and helpful with respect to concerns raised by the Office of Energy Security. Its resource planner modified some inputs in IRP Manager as requested by OES.

⁶⁸ App. Exs. 118 at 23-28 (Schumacher); 118A at 4-7 (Schumacher). HUC has a power sale agreement to buy 40 MW of capacity and energy from MRES. Initial ALJ Report, Finding 10.

⁶⁹ DOC Exs. 21 at 6-7 (Rakow) and 27 at 2, 16 (Rakow).

⁷⁰ JI Ex. 38 at 18-19.

Ultimately, the Office of Energy Security offered a conditional endorsement of OTP's modeling.⁷¹

84. In its IRP Manager modeling, OTP applied many inputs, or assumptions, to reflect OTP's situation, including the following. OTP has lost or is losing almost 115 MW of resources by 2010, over 105 MW of which is baseload. It plans to retire 145 MW of baseload coal-fired capacity at Hoot Lake Units 2 and 3 at the end of 2017. A Manitoba Hydro option that was examined in the first phase of this proceeding is not a possibility because Manitoba Hydro no longer has capacity and energy available. OTP's modeling assumed full implementation of the RES, full achievement of the 1.5 percent conservation savings, and a carbon tax of \$9/ton on all tons of emissions. With these inputs, the model showed that 170 MW of Big Stone II is the most economic alternative.⁷²

85. OTP's examination of alternatives was limited. Originally, its resource planner did not vary any input assumptions other than turning the opportunity to make wholesale sales off and on, and did not examine the impact of higher CO2 prices, higher construction costs, additional schedule delays, higher or lower fuel prices, or higher or lower loads and energy requirements.⁷³ However, in rebuttal testimony, he increased capital costs by 10 percent and increased carbon dioxide costs somewhat by adding in the high environmental cost values established by the Commission under Minn. Stat. § 216B.2422. It is not clear from his testimony exactly what value he used. The revised modeling still demonstrated a baseload need from Big Stone II of 170 MW.⁷⁴

86. Dr. Rakow stated that if OTP's assumptions and modeling are reasonable, it has demonstrated a baseload need from BSII of 170 MW.⁷⁵ However, he had concerns about some of the assumptions in OTP's modeling.

87. OTP's model assumed the shutdown of its Hoot Lake generation facility at the end of 2017. If that had not been assumed, the model would not have selected the same quantity of energy and capacity from Big Stone II. The Office of Energy Security recommends that OTP be required to commit to shutting down Hoot Lake consistent with the modeling provided so that the conditions assumed in the modeling that created the claimed need actually arise. They recommend that a compliance filing be due approximately 90 days after the date of the Commission's final order in this docket.⁷⁶

88. There is no evidence to suggest any reason to doubt that closing down Hoot Lake is truly OTP's intention. It is reasonable for OTP to replace it with the more efficient and less-polluting Big Stone II. It was reasonable for the model to assume it would be closed.

⁷¹ DOC Exs. 20 at 20 (Rakow), 22 at 5 (Rakow), 27 at 2-5 (Rakow).

⁷² App. Exs. 116 at 19-20 (Morlock) and 131 at 5-8 (Morlock).

⁷³ JI Ex. 35 at 61 (Schlissel); DOC Ex. 22 at 5 (Rakow).

⁷⁴ App. Ex. 131 at 14-15 (Morlock).

⁷⁵ DOC Ex. 27 at 16 (Rakow).

⁷⁶ DOC Ex. 27 at 4-5 (Rakow).

89. OTP used several incorrect fuel cost assumptions in its capacity expansion modeling and failed to test a variety of fuel cost scenarios. For example, it assumed that the MISO wholesale energy market is “predominately driven” by the cost of natural gas fueled combustion turbines and therefore applied its CO2 cost to combustion turbines rather than coal plants. But, the load following units in MISO are more often coal-fired generation than natural-gas-fired generation, so coal represents the price setting unit more often than natural gas. Therefore, the inputs should have reflected the cost of CO2 on coal plants or, more accurately, the weighted average of gas and coal CO2 costs.⁷⁷ This error biased the model in favor of Big Stone II.

90. Another error regarding OTP’s fuel cost assumptions is OTP’s view that natural gas pricing is more volatile than coal prices and that future natural gas prices are likely to be much higher than coal prices will be. Actually, forecasts of future coal prices have risen nearly as much over the past five years as forecasts of future natural gas prices have risen during the past ten years. Thus, it cannot be said that adding natural gas combustion turbines for peaking to back up the renewables represents a higher risk of future fuel price increases than adding coal.⁷⁸ This error biased the model in favor of Big Stone II.

91. Another incorrect assumption was that imposition of federal CO2 costs will cause natural gas prices to rise more than other fuels. In the Office of Energy Security’s opinion, the first main effect of a CO2 tax that must be considered in modeling is that new generation additions will be pushed from carbon-intensive coal to less carbon-intensive natural gas generation and, similarly, from natural gas generation to renewables, nuclear resources, and energy conservation. The second is that existing carbon-intense generation will be displaced by new less carbon-intense generation.⁷⁹ Thus, demand for natural gas may actually decrease. Again, increasing the gas price made Big Stone II more attractive in the model.

92. The Office of Energy Security’s main concern as to OTP’s assumed fuel prices is that OTP did not model a variety of different fuel price assumptions, such as significantly higher coal prices. For example, even if future natural gas prices were assumed to be much higher than coal prices, OTP’s system may be relatively unaffected because of the relatively small amount of natural gas that would be used. But OTP is highly dependent on coal for meeting almost all of its customers’ energy needs. Therefore, even small increases in coal prices could result in a very large rise in OTP’s energy price. Thus, there is a valid concern regarding OTP’s over-exposure to coal, which OTP did not model.⁸⁰

93. Estimating the cost of future CO2 regulation is just as important for accurate modeling as estimating future natural gas and coal prices. The Office of Energy Security did not endorse any particular cost or range of costs for this proceeding, but instead urged OTP and the other Applicants to test different cost

⁷⁷ DOC Exs. 20 at 6-7 (Rakow) and 27 at 2-3 (Rakow).

⁷⁸ DOC Ex. 20 at 30-31 (Rakow).

⁷⁹ DOC Exs. 20 at 7-8 (Rakow) and Ex. 22 at 5 (Rakow).

⁸⁰ DOC Ex. 27 (Rakow) at 9-10; Tr. Vol. III (NP) at 37.

assumptions. OTP did not do so to any significant degree, even in the revised IRP Manager runs presented on rebuttal. This failure left a significant risk virtually unexplored. It is a deficiency in OTP's modeling.

94. Thus, OTP failed to allow its model to test the system impact as to the possibility of much higher levels of costs for CO₂, higher construction costs and costs of delay, and a variety of fuel cost changes.⁸¹ Because of all these deficiencies, OTP has not satisfactorily demonstrated that did that none of the energy it claims it needs from Big Stone II can be obtained more economically from renewable alternatives.

V. Public Comments

95. Members of the public were afforded numerous opportunities to submit comments during this proceeding, and many individuals elected to do so, either by making oral comments at the supplemental public hearing held in Ortonville, Minnesota, on January 10, 2008, or by submitting written comments. As was the case in the original proceeding, nearly all the comments made during this recommenced proceeding related to Big Stone II, which was often referred to as "the project," and few comments focused on the transmission lines.

96. Although the majority of the public comments exceeded the limited scope of the issues to be addressed in this recommenced proceeding, they are summarized below for the consideration of the Commission. Other comments made by representatives of the parties have been considered as part of those parties' evidence, and are not generally repeated here.

Economic Impact

97. Dick Anfang, President of the Minnesota State Building and Construction Trades Council, supported the Big Stone II power plant because it will provide well-paying jobs during and after construction, produce more electrical power to meet energy demands, emit lesser levels of pollutants, and provide new transmission for renewable energy.⁸²

98. Local Union 949 of the International Brotherhood of Electrical Workers (IBEW), which represents approximately 2,500 workers in North Dakota, South Dakota, Minnesota, and Iowa, requested favorable consideration of the Applicants' petition for a Certificate of Need. Local 949 asserted that consumption of electricity is growing at the approximate rate of 2.5% per year and is expected to continue to an expected rate of 15% over the next decade. It contended that a coal-fired generating plant would meet customers' needs for an efficient, reliable, and safe source of power, and emphasized that the plant will use the best available emission-control technology and operate in an environmentally responsible manner.⁸³ Roger Hoff, an employee of Otter Tail Power and a member of IBEW Local 949, also expressed support for the construction of the

⁸¹ JI Ex. 33 at 61 (Schlissel) and DOC Ex. 22 at 5 (Rakow).

⁸² Letter from Dick Anfang (Jan. 8, 2008) (Public Ex. 5).

⁸³ Letter from Vincent Guertin (Jan. 8, 2008) (Public Ex. 29).

Big Stone II plant and the proposed transmission lines. He asserted that base load generation is needed to transmit electricity from the proposed plant as well as wind generators, and that the economy of the area is dependent on reliable, affordable electricity.⁸⁴

99. Mark Zemlicka, an employee of Big Stone I and a member of the International Brotherhood of Electrical Workers, also supported the construction of Big Stone II. He asserted that during construction, an average of 625 and a peak of 1,500 construction workers would be employed, and noted that many of these jobs would be union jobs. Once the plant was up and running, he stated that 35 to 40 new employees would be required to operate the plant. He contended that the ripple effect of these new jobs would generate \$3.1 million in goods and services and increase the tax base in the area. He urged support for the project because it would address the potential energy shortfall by more than doubling the generating capacity of the existing plant, and pointed out that a single highly advanced wet scrubber would be installed to serve both plants.⁸⁵

100. George Smith, Executive Director of the Grant County Development Corporation in Milbank, South Dakota, urged support for the Big Stone II plant and transmission lines in part because the region will benefit from employment and spin-off businesses during construction and from the new jobs that will exist upon completion of the plant. He also contended that more power will be needed in the future and warned that shortages will occur and costs will become higher if the new plant is not built.⁸⁶

101. Robin Johnson, 2007 President of the Montevideo Area Chamber of Commerce and a member of Clean Up the River Environment, expressed support for Big Stone II as the best practical answer available in the near term, and stressed the benefits to the local economy.⁸⁷

102. The Swift County Board passed a resolution of support for the Big Stone II Project generation and transmission facilities at a meeting held on January 15, 2008. The resolution noted that additional baseload resources were necessary and identified the Big Stone II Project as “the most cost effective option to meet the growing needs of Swift County and other MRES members to ensure rate stability and service reliability on a timely basis.” The resolution emphasized the potential for future resource development that was created by the additional transmission capacity proposed by the project as well as the cost stability and system reliability that would result.⁸⁸

103. Paul Kittelson, the Mayor of Benson, urged approval of the proposed transmission lines. He indicated that new transmission and new baseload electricity are needed by the year 2012, and asserted that a coal-fired plant like Big Stone II would be able to provide base load at a reasonable price 100% of the time.⁸⁹ Blair Johnson, the

⁸⁴ Letter from Roger Hoff (Jan. 14, 2008) (Public Ex. 25).

⁸⁵ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 69-70.

⁸⁶ Letter from George Smith (Jan. 10, 2008) (Public Ex. 26).

⁸⁷ Letter from Robin Johnson (Public Comments received by E-Mail).

⁸⁸ Resolution of Support for the Big Stone II Project (Jan. 15, 2008) (Public Ex. 30).

⁸⁹ Letter from Paul Kittelson (Jan. 14, 2008) (Public Ex. 33).

Mayor of Ortonville, also expressed support for the Big Stone II plant and the proposed transmission lines, particularly because they could be used to carry wind energy.⁹⁰

104. The Minnesota Chamber of Commerce, represented by William Blazer, expressed support for the issuance of the Certificate of Need. Members of the Chamber are concerned about the supply, cost, and reliability of electricity. They strongly support building transmission lines that would bring power to Minnesota from other states in order to increase the supply of electricity. The Chamber also asserted that building a state-of-the-art power plant like Big Stone II will benefit the environment, give utilities more options with respect to some of their other power plants, and open up the possibility for more wind-generated power.⁹¹

105. Robert Pflueger, a retired attorney who resides in Ortonville, filed comments noting his support for the Big Stone II Project. He asserted that usage of electrical energy is increasing; Minnesota's transmission grid is outmoded and requires immediate attention; and the Project would provide reliable base load generation at the lowest cost. He emphasized that the jobs created by the Project both during and after construction would be a big boost to the local economy and that low energy rates would contribute to the business climate.⁹²

106. Marilyn Hanson, Branch President of CenBank in Ortonville, testified in favor of the project because it would provide a reliable and affordable source of electric power.⁹³ Jim Larson, Mike Rausch, and Jerry Gesch also expressed support for the project as a reliable and inexpensive source of needed base load. Mr. Rausch emphasized the decrease in emissions from Big Stone I that will occur if Big Stone II is built.⁹⁴ Rusty Dinberg, Ortonville resident, supported the Project as a reliable source of needed electricity and urged that the transmission line that runs from Ortonville to Morris be approved.⁹⁵

107. Al Crowser, General Manager of Alexandria Light and Power Municipal Electrical Utility, and Bruce Gomm, General Manager of Willmar Municipal Utilities, expressed support for the plant and transmission projects. They asserted that additional base load generation is needed during the next decade, and contended that the project will benefit the regional grid as well as the local economy. Mr. Gomm noted that even a short power outage may be life-threatening for some customers. Both Mr. Gomm and Mr. Crowser support the development of renewable energy and expect that the proposal will afford an increased opportunity to transmit wind-generated power.⁹⁶

108. Milt Latvala, Chairman of the Nashwauk Public Utilities Commission, also supported the Applicants' efforts to provide additional base load resources in the region.

⁹⁰ Letter from Blair Johnson (Public Comments received by E-Mail).

⁹¹ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 28-31; Public Ex. 10.

⁹² Letter from Robert Pflueger (Jan. 10, 2008) (Public Ex. 34).

⁹³ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 80-82.

⁹⁴ *Id.* at 86-90.

⁹⁵ Letter from Rusty Dinberg (undated) (Public Ex. 7).

⁹⁶ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 82-86, 112-115.

He indicated that the Nashwauk Public Utility Commission had completed a non-binding, non-exclusive expression of interest in participating in the Big Stone II Project in the range of 150-200 MW. The Nashwauk PUC has projected a need from and after the year 2013 for up to 400 MW baseload, up to 100 MW peaking, and up to 100 MW in renewables.⁹⁷

109. Babcock & Brown, a builder, owner and operator of energy assets in the United States and abroad, submitted comments urging approval of the CON for the transmission facilities. As a basis for its support, it noted that no new large base load generation has come on-line in the region since 1987; new generation capacity is needed by 2012 to avoid a capacity shortfall estimated at 6,600 MW; reserve generation capacity has been forecasted to disappear by 2011; and annual economic growth has been approximately 1.5% in the region, and over 2% in Minnesota. Brown & Babcock emphasized the potential for wind and other renewable energy transmission on the lines. Babcock & Brown indicated that it has an interest in acquiring the unsubscribed portion of the Big Stone II plant.⁹⁸

110. Robert Bonawitz, President of the Willmar Municipal Utility Commission and member of the Board of Directors of the West Central Regional Sustainable Development Partnership, testified in support of the project. He expressed the view that it is necessary to develop a mix of technologies, including biomass, wind, geothermal, and coal-fired plants, in order to ensure that citizens receive cheap and reliable energy.⁹⁹

111. Ardell Nelson, Administrative Manager with State Auto Insurance Companies in Milbank, South Dakota, submitted a letter supporting the construction of Big Stone II, noting that ample electrical power is needed to attract young people to live and work in rural Minnesota and South Dakota.¹⁰⁰

112. Burton Nypen, retired Superintendent of the Ortonville Schools, supported the Big Stone II plant and transmission lines because they would increase economic development, create jobs, and provide reliable electrical service.¹⁰¹

113. Terry LaVoi, a resident of Ortonville, testified in favor of the transmission lines. She stated that municipal populations will be growing, according to projections reflected in a recent United Nations Population Watch publication, and asserted that transmission lines would be needed to supply growing cities with electricity.¹⁰² Nash and Elsie Perrine and Steve Berkner, all residents of Ortonville, also filed comments in

⁹⁷ Letter from Milt Latvala (Jan. 15, 2008) (Public Ex. 37).

⁹⁸ Letter from Robert Bergstrom (Jan. 15, 2008) (Public Ex. 35).

⁹⁹ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 42-46.

¹⁰⁰ Letter from Ardell Nelson (Jan. 4, 2008) (Public Ex. 3).

¹⁰¹ Letter from Burton Nypen (Jan. 12, 2008) (Public Ex. 28).

¹⁰² Ortonville Public Hearing, Jan. 10, 2008, Transcript at 14.

support of the transmission facilities, and noted that those lines would allow for transmission of renewable energy including wind.¹⁰³

114. Gradon West, a resident of New London, opposed the construction of Big Stone II due to environmental and human health costs caused by the emission of mercury and other particulates. He asserted that, once carbon taxes are imposed on emissions of carbon dioxide, it will no longer be cheap to burn coal, and customers will be asked to pay the costs.¹⁰⁴

[The following finding incorrectly attributed the comment to Dan Oakes. Mr. Oakes commented on the proceeding, supporting the project and urging that the Certificate of Need be granted.]

115. Gil Lanners, a landowner in the Ortonville area, expressed concerns about the electromagnetic field produced by power lines, and opposed the proposed upgrading of the present 115 kV power line running from Canby to Granite Falls. He asserted that the 115 kV line renders the satellite-produced GPS-WAAS signal for electronic guidance of farm machinery useless, and argued that, if the voltage of the line is increased, the magnetic field of influence will increase exponentially. Based upon his belief that farm machinery will operate robotically from electronic signals in the future, he expressed concern that the land within the area of influence around the power lines will become useless for agricultural crop production. Mr. Lanners also indicated that modern farm tractors, combines, sprayers, and other equipment have numerous electronic controllers and asserted that a 345 kV overhead line will interfere with these controllers, resulting in a loss of agricultural revenue. He urged that power lines crossing agricultural land be buried.¹⁰⁵

116. Kelly Fuller commented at the Ortonville public hearing that there is a great deal of financial risk associated with the Big Stone II and transmission line project, and urged the PUC to be responsible and avoid risking the public's money and health on those projects.¹⁰⁶

Community-Owned Wind Generation

117. Bill Schumacher, a member of the Executive Council of the Intertribal Council on Utility Policy (a coalition of Midwest tribes dedicated to developing wind energy in the Midwest) asserted that there is enough wind potential on the Midwestern tribal reservations to supply two-thirds of all the electric needs of the county. He pointed out that a study conducted by Stanford University concluded that wind energy would be reliable if it was spread over a diverse geographical area. In light of the human and environmental costs of coal, he urged the use of renewable energy sources such as

¹⁰³ Letters from Nash and Elsie Perrine (Jan. 16, 2008) and Steve Berkner (Jan. 17, 2008) (Public Comments received by E-Mail).

¹⁰⁴ Letter from Gradon West (Jan. 12, 2008) (Public Ex. 23).

¹⁰⁵ Letter from Gil Lanners (Public Comments received by E-Mail).

¹⁰⁶ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 25-27.

wind, hydro and solar. He indicated that he did favor the transmission portion of the project.¹⁰⁷

118. Galen Bruer, an attorney and member of the Board of Governors for a C-BED project located in Stevens County, noted that the combined MISO applications for wind development projects in west central Minnesota (both C-BED and non-C-BED) exceed 1,000 MW. He stated that these projects are generally located near State Highway 28 in Stevens, Big Stone, and Traverse Counties, and would likely seek to interconnect with the GRE 115 kV line just south of Highway 28 after that line is upgraded. Mr. Bruer urged that the GRE 115 kV line between the Big Stone Power Plant and Morris be upgraded to 345 kV as an important step in meeting Minnesota's overall energy needs and renewable energy goals. He also recommended that an interconnection preference be given to the local area C-BEDs, or that utilities be required to purchase power from the C-BEDs awaiting approval to interconnect with the upgraded lines before purchasing power from any other generation sources.¹⁰⁸ Paul Strong of Ortonville, who is also involved in a C-BED wind project, voiced similar opinions in support of adding transmission capacity for wind.¹⁰⁹

119. Jim Falk, a resident of Swift County who is involved in a wind project that is in the queue, asserted that there is no need for the Big Stone II coal plant or the proposed transmission lines due to declining population in rural counties in the region. He contended that there is a tremendous amount of capacity in the existing system and that a distributive generation approach with minor upgrades in the grid would serve the needs of rural customers with minimum costs and maximum benefits. He stated that it would not be feasible for wind projects to interconnect directly onto the proposed high voltage lines and argued that it was misleading for the Applicants to imply that there will be room for renewable energy on the proposed transmission lines. Instead, he contended that the new lines would carry power generated from coal and "block out" new renewable development.¹¹⁰

120. Andrew Falk, a farmer in Swift County who is involved with wind projects, asserted that he has had a serious problem with interconnecting to transmission lines. He contended that the Applicants have no authority to allege that the transmission project will allow more wind on the grid because MISO is the entity that will make that decision, and argued that the MISO queue is an "archaic" system that is being "constantly gamed." He believes that requests are being put into the queue to tie up space for speculative purposes or to promote other projects. He urged the Commission to deny the Applicants' request for a Certificate of Need.¹¹¹ Paul Blackburn, an energy attorney, commented that the design of the transmission lines, including where and how they are built and where the substations are located, affects what will be able to go on

¹⁰⁷ *Id.* at 95-97.

¹⁰⁸ Letter from Galen Bruer (Public Comments received by E-Mail).

¹⁰⁹ Letter from Paul Strong (Public Comments received by E-Mail).

¹¹⁰ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 115-117; Letter from Jim Falk (Jan. 17, 2008) (Public Comments received by E-Mail).

¹¹¹ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 119-130.

the line. He agreed that there is no guarantee that a certain amount of wind would go on the lines.¹¹²

121. Roman Taffe, an Ortonville resident and an investor in a local wind project, supported the construction of the proposed transmission lines and the line upgrade on the Morris route. He asserted that the area badly needs additional transmission capability. He urged that the Applicants be required to “re-conductor” the line to 230 kV but keep another 115 kV line available for wind power.¹¹³ Aaron Asmus also urged that the Certificate of Need for the transmission facilities be granted because they are needed for the development of wind farms.¹¹⁴

122. Noel Rahn, President of Geronimo Wind Energy, supported the transmission project because, in his view, it will further the development of wind energy in the region by providing more transmission capacity. He also supported the construction of Big Stone II as a reliable base load generating station.¹¹⁵ Similarly, Lewis Miller, a retired farmer and a Wind Energy Consultant, urged approval of the CON for the transmission lines because the lines will allow for transmission of wind energy as well as energy from the Big Stone plants.¹¹⁶

Global Warming/CO2 Emissions

123. Members of Clean Up the River Environment (CURE) objected to the project on the grounds that it would contribute to global warming through the emission of greenhouse gases. They urged the use of renewable energy rather than the proposed coal-generated electricity.¹¹⁷

124. Paul Sobocinski, who farms in southwestern Minnesota, questioned whether the Certificate of Need should be issued. He is a member of CURE and also works with the Land Stewardship Project, a rural organization that works to promote sustainable agriculture. He asserted that coal is old technology and the future is in renewables, and urged that the water issues be carefully considered.¹¹⁸

125. The North Star Chapter of the Sierra Club filed written comments emphasizing the financial risk associated with investment in a new coal plant that stands to face carbon regulation costs as well as increasing construction, coal, and delay costs; questioning the need for the power from the proposed project; and noting environmental and public health concerns stemming from mercury, carbon dioxide and other emissions and lower water levels.¹¹⁹ Cesia Kearns, a community organizer with the North Star Chapter of the Sierra Club, displayed a petition at the public hearing in

¹¹² *Id.* at 136-138; Letter from Andrew Falk (Public Comments received by E-Mail).

¹¹³ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 27-28; Letter from Roman Taffe (Public Comments received by E-Mail).

¹¹⁴ Letter from Aaron Asmus (Public Comments received by E-Mail).

¹¹⁵ Letter from Noel Rahn (Dec. 4, 2007) (Public Ex. 1).

¹¹⁶ Letter from Lewis Miller (Jan. 14, 2008) (Public Ex. 32).

¹¹⁷ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 66-68 and Public Ex. 16.

¹¹⁸ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 110-112.

¹¹⁹ Jan. 17, 2008, Letter from Christopher Childs, Conservation Chair.

Ortonville that was signed by an estimated 2,000 people who support Minnesota's commitment to reduce its carbon dioxide emissions by 90 percent by 2015. She urged closer examination of renewable energy alternatives to the Big Stone II project, particular in light of carbon penalties and health implications.¹²⁰

126. Many other individuals filed comments noting their opposition to the proposed coal plant due to global warming and climate change issues, environmental concerns, and the need to explore renewable alternatives.¹²¹ In contrast, Patricia Anderson of Hanley Falls asserted that global warming concerns were "over-blown" and expressed support for the Big Stone II generation plant going forward.¹²²

Pollutant Emissions

127. Dorothy Anderson, M.D., a child psychiatrist, urged that Big Stone II not be built. She raised concerns about the heavy metals that would be released by the plant for the next 40 or 50 years, such as mercury, lead, and arsenic. She argued that the 80 or 90 pounds of mercury per year to be emitted by Big Stone II is an enormous amount, and contended that as little as one teaspoon of mercury in a ten-acre lake is enough to elevate mercury levels in large fish to the point of issuing a fish advisory (due to biomagnification and bioaccumulation). Dr. Anderson indicated that higher rates of Attention Deficit/Hyperactivity Disorder (ADHD) symptoms are associated with blood lead levels as low as 1 and 2 micrograms per deciliter. She believes that environmental causes are a factor in ADHD, autism, and learning disabilities.¹²³

128. Similarly, Katherine Slama, Ph.D., a Clinical Psychologist, filed comments noting that, during 1996-2006, when she provided psychological services in Big Stone County, she was struck by the number of children with ADHD and learning disabilities. She raised concern about a possible link to mercury and carbon dioxide emissions and recommended that an environmental study be conducted.¹²⁴

¹²⁰ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 74-79.

¹²¹ See, e.g., Letters from Marcia Thurmer (Jan. 15, 2008) (Public Comments received by E-Mail); Keith Davison (Jan. 14, 2008); John Sovell (Jan. 16, 2008); Lawrence Monnens (Jan. 20, 2008) (Public Ex. 43); Audrey Arner and Richard Handeen (Jan. 24, 2008) (Public Ex. 44); Susan Granger (Jan. 17, 2008) (Public Comments received by E-Mail); Mark Hirsch (Jan. 5, 2008) (Public Ex. 2); John Abraham (Jan. 5, 2008) (Public Ex. 4); Diane Ladner (Jan. 12, 2008) (Public Ex. 21 and Public Comments received by E-Mail); Philip Iverslie (Jan. 11, 2008) (Public Ex. 24); Sarah Tilden (Jan. 16, 2008) (Public Ex. 31a); Justin Tilden (undated) (Public Ex. 31c); Megan Stevens (undated) (Public Ex. 31b); Dustin German (undated) (Public Ex. 31d); Caroline Portoghese (Jan. 17, 2008) (Public Comments received by E-Mail); Ingrid Vick (Jan. 10, 2008) (Public Ex. 16A); Sandra Clarke (Public Comments received by E-Mail); Al Christensen (Public Comments received by E-Mail); Margaret Keating (Public Comments received by E-Mail); Ute Zahn (Public Comments received by E-Mail); Daniel Callahan (Public Comments received by E-Mail); Hugh and Linda Curtler (Public Comments received by E-Mail); Tim and Margo Roth (Public Comments received by E-Mail); Lucy and Gene Tokheim (Public Comments received by E-Mail); Mary Gillespie (Public Comments received by E-Mail); Erika Koffel (Public Comments received by E-Mail); Richard Massey (Public Comments received by E-Mail); C.E. Kastigan (Public Comments received by E-Mail); .

¹²² Letter from Patricia Anderson (Public Comments received by E-Mail).

¹²³ Letter from Dorothy Anderson (Jan. 10, 2008) (Public Ex. 27).

¹²⁴ Letter from Katherine Slama (undated) (Public Ex. 16b).

129. Mary Jo Stueve of Clean Water Action also objected to the project. She offered two State Cancer Profiles from the Center for Disease Control showing that Big Stone County in Minnesota was one of three counties in Minnesota that experienced rising trends in death rates due to cancer prior to 2004. She urged that further investigation be done regarding this data.¹²⁵

130. Marvin Napgezek, a physician from Willmar and a member of the Union of Concerned Scientists, expressed concern about the adverse effects of particles emitted from smokestacks, particularly fine particulates. He provided information on Harvard studies linking exposure to air pollution with deaths related to heart and lung disease and lung cancer and showing improvements in health when air pollution is decreased. He also indicated that other studies have shown an association between particle pollution and increases in costs, shortness of breath, asthma, and hospitalization period rather than expanding a coal-burning plant in the area, he recommended that nonpolluting sources of energy be developed, such as wind and solar power.¹²⁶

131. David Soehren, a retired DNR employee from Lac qui Parle County who previously served as Area Wildlife Manager for Big Stone, Lac qui Parle, and Swift Counties, opposed the Project. He testified that, on clear days, he can see yellow/gray smoke and a layer of particulates form over the Big Stone I plant 28 miles northwest of his farm and extend many miles to the east and south.¹²⁷ Similarly, Casey Wojtalewicz, a student at St. John's University, testified that he grew up near Appleton, Minnesota, 30 miles southeast of Big Stone I, and on most days, was able to observe "a rust-colored plume of poisonous chemicals" from the plant heading southeast into the Minnesota River Valley. Casey Wojtalewicz noted that power companies in Colorado, Idaho, Oklahoma and Texas have decided to cancel plans to build new coal-fired power plants and that applications to build such plants have been rejected in Oregon, Oklahoma, North Carolina, Kansas and Florida. He objected to the pollution associated with coal power plants and urged that the Applicants not build Big Stone II. He recommended that power be provided by local, cleaner sources, such as wind, solar, geothermal and biomass.¹²⁸

132. Richard Halterman, a science teacher in Montevideo, testified that an analysis of a small sample of fish taken from the Minnesota River a few years ago showed a trend toward levels of mercury that should not be consumed and urged that further study be done before building Big Stone II due to the adverse health effects of mercury.¹²⁹ Several Montevideo High School students echoed his concerns about mercury levels in the Minnesota River.¹³⁰

¹²⁵ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 117-119; Public Exs. 18-19.

¹²⁶ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 51-53; Public Ex.13.

¹²⁷ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 54-55.

¹²⁸ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 15-19; Public Ex. 14.

¹²⁹ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 20-25.

¹³⁰ Letters from Megan Stevens (undated) (Public Ex. 31b); Justin Tilden (undated) (Public Ex. 31c); Dustin German (undated) (Public Ex. 31d); Tate Clark (undated) (Public Ex. 31e).

133. Waziyatanwin, Ph.D., of the Upper Sioux Indian Community opposed both Big Stone II and the plan to connect the plant to Minnesota's power grid through transmission lines. She noted that the Minnesota River Valley, the cherished ancient homeland of the Dakota Nation, has been severely affected by pollution and development and asserted that another coal-burning power plant in this region would jeopardize all plant and animal life as well as human communities that include the Dakota reservations of Lower Sioux, Upper Sioux, and Prior Lake. She expressed concern about adverse effects on water supplies, mercury emissions, and carbon dioxide emissions.¹³¹

134. Chris Mato Nunpa of the Yellow Medicine Community of the Dakota near Granite Falls stressed the importance in Dakota teachings of the earth, water, animals and all living creation. He opposed construction of Big Stone II due to the harmful effects on the environment, particularly the mercury emissions. He also generally objected to the construction of transmission lines or railroad projects that disturb the burial grounds of indigenous peoples.¹³²

135. The Willmar Area League of Women Voters urged that the PUC deny the Applicants' request for a Certificate of Need for the transmission lines and require further consideration of cleaner and renewable resources. It expressed concern about the effect of mercury emissions on wildlife and on the lakes of Kandiyohi County and other state waters, and pointed out that eight of the nine lakes in Kandiyohi County listed on the MPCA's impaired waters list identify mercury as the main stressor contributing to their impairment. The League noted that coal-fired power plants have been identified by the EPA as the largest contributor to the mercury problem, accounting for over 40 percent of total U.S. mercury emissions. It also expressed concern about the contribution of Big Stone II to climate change, noting that the proposed Big Stone II plant will emit 4.7 million tons of carbon dioxide per year.¹³³

136. Geoff Hathaway, a business owner from Montevideo, opposed the construction of a coal-burning electrical facility. In his view, the negative impacts on the environment and on the region's eco-tourism weigh against the construction of Big Stone II.¹³⁴ Susan Campion, a Montevideo resident, also objected to the adverse environmental impact of Big Stone II and urged that a better, long-term solution be found.¹³⁵

137. Joseph Scholberg opposed the project, emphasizing the detrimental pollution of the air and water associated with the mercury emissions as well as the output of greenhouse gases. He also questioned the need for the Big Stone II plant and urged development of home-grown renewable energy sources.¹³⁶ Sr. Shirley Mueller, a

¹³¹ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 32-35; Public Ex. 11.

¹³² Ortonville Public Hearing, Jan. 10, 2008, Transcript at 46-51; Public Ex. 12.

¹³³ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 36-38; Letter from Marie Ostby (undated) (Public Ex. 6).

¹³⁴ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 38-42.

¹³⁵ Letter from Susan Campion (Public Comments received by E-Mail).

¹³⁶ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 71-72; Public Ex. 17.

resident of Milbank, South Dakota, also opposed the Big Stone II project for environmental and health reasons, and recommended solar energy as an alternative.¹³⁷ Nathaniel Hart urged that the Commission deny the CON because the plant will pose a serious threat to clean water, pure air, and animal, plant, and human life. He also objected to the appropriation of wetlands and aquifers for industrial use.¹³⁸ John Lindstrom, a resident of New London, stated that the mercury emissions from the plant would be extremely detrimental to both human and animal life, and concluded that the long term cost outweighs any short term benefit associated with increased generation capacity. He also asserted that the Applicants had not aggressively encouraged that their customers practice energy conservation.¹³⁹

138. Brian Wojtalewicz, an attorney from Appleton, Minnesota, warned that the conditions proposed by the Department of Commerce and the Applicants on the reduction of mercury emissions from Big Stone II would not take effect in 2014, would be subject to extensions and possible exceptions, and would be unenforceable given that the plant is not located in Minnesota. He asserted that the EPA's Toxic Release Inventory for 1999-2005 showed disturbing releases of barium, lead, manganese, zinc, and mercury compounds to various individuals in Big Stone City.¹⁴⁰

139. Mark Rolfes, Project Manager for the Big Stone II Project, responded that mercury monitoring and reporting is required under federal EPA standards and noted that the EPA may impose fines to enforce those standards. He further indicated that the Applicants had committed to reduce total mercury emissions from both Big Stone units by 90 percent. Mr. Rolfes stated that, when coal is burned, elements like mercury, barium, and copper are collected at low levels in the fly ash, and fly ash is a common ingredient in cement.¹⁴¹ Another commentator at the public hearing, Paul Blackburn, an energy attorney, questioned whether the EPA would effectively enforce the applicable standards.¹⁴²

Water Usage/Impact on Lake Levels

140. Copies of comments relating to the federal Supplemental Draft Environmental Impact Statement that were filed by the Minnesota Department of Natural Resources (DNR) on December 10, 2007,¹⁴³ were filed in this proceeding by Clear Water Action. In those comments, the DNR noted that, despite its recommendations, the South Dakota Department of Environment and Natural Resources has permitted Otter Tail Power Company to appropriate as the primary source of cooling water for the plant up to 18,000 acre feet or 5.9 billion gallons per year

¹³⁷ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 73-74; Letter from Sr. Shirley Mueller (Public Comments received by E-Mail).

¹³⁸ Letter from Nathaniel Hart (Jan. 8, 2008) (Public Ex. 20).

¹³⁹ Letter from John Lindstrom (Jan. 11, 2008) (Public Ex. 21).

¹⁴⁰ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 58-65; Public Ex. 15.

¹⁴¹ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 104-105.

¹⁴² *Id.* at 135.

¹⁴³ Dec. 10, 2007, Letter from Matt Langan, Environmental Planner, DNR to Nancy Wedel, Western Area Power Administration (Public Ex. 16E).

of water from Big Stone Lake (approximately 20% of the lake's volume) and, as an alternate cooling water source, up to 10,000 acre feet or 3.3 billion gallons of groundwater (roughly equivalent to the annual water supply needs of Sioux Falls).

141. The DNR indicated that the surface water permit allows up to 218 acre feet per day to be taken year round from Big Stone Lake when the lake elevation is above 967 feet mean sea level. The DNR asserted that this did not take into account the current operation of the dam, which it indicated has been operated over the past 20 years with the goal of maintaining a normal summer pool elevation of 968 feet. The DNR recommended that the Supplemental Final EIS take this into consideration.

142. The DNR also expressed concern about the proposed use of ground water as an alternate supply of cooling water for the plant because it is questionable whether the aquifer to be tapped is part of the Veblen Aquifer as claimed and the DNR believes the aquifer test performed for the project is not adequate to assess the long-term water supply capacity of the proposed well field. In addition, the DNR also indicated that the potential impacts on downstream base flows during periods of drought appear to be significant and have not been adequately investigated, and may affect surface waters in Minnesota. Finally, the DNR contended that the groundwater model of proposed impacts does not take into account anything that occurred before 1945, including a ten-year drought that occurred during the 1930's. The DNR recommended that these concerns be addressed in the Supplemental Final EIS.

143. The DNR's comments on the Supplemental Draft EIS also raised several issues relating to the analysis of expected impacts to Big Stone Lake and downstream waters during an extended drought and during months of ice cover. In particular, the DNR asserted that discussion of "average" lake levels masked significant impacts during an extended drought as well as seasonal effects. It contended that the lake level drawdown model that simulated historic water levels under current and additional pumping rates did not accurately reflect known water levels that occurred during the same time period. The DNR contended that the ice-covered months should be considered a separate stratum due to the concern of winterkill of fish due to lack of oxygen, and argued that the proposed appropriation may result in water levels being lowered by six inches or more, which would significantly affect the potential for winterkill. The DNR recommended a monitoring plan be developed and implemented as part of the Final Supplemental EIS.

144. The DNR commented that Big Stone Lake is a premier Minnesota walleye fishery and the largest recreational lake in Western Minnesota. It noted that significant efforts have been made by the Upper Minnesota River Watershed District, Big Stone County, the State of Minnesota, and the EPA over the past several decades to improve the lake's water quality, and warned that lowered lake levels during drought cycles caused by pumping would make the lake more susceptible to anoxia conditions, and increase the likelihood of fish kills and toxic blue-green algae blooms. It also pointed out that Big Stone Lake has been identified as an "impaired water" based on mercury concentrations, and recommended investigation of the potential for increased mercury release from sediments as a result of lower water levels and anoxic conditions.

145. The DNR also raised concerns that downstream effects received little mention in the Supplemental Draft EIS. It noted that the Big Stone National Wildlife Refuge, Marsh Lake, and Lac Qui Parle Lake have approximately 15,000 acres of shallow lakes that have already been adversely affected by drainage, agricultural runoff and wastewater discharges upstream. The DNR asserted that reducing the relative contribution of base flow from Big Stone Lake during drought periods will negatively affect downstream waters. In the view of the DNR, the decision to use groundwater and eliminate the additional water storage that would have been provided by the 450-acre pond "raises more questions about Big Stone I and II Power Plants' ability to operate sustainably both during a short-term drought of 12-24 months, or during a longer-term drought of 48-120 months, such as occurred in the 1930's." The DNR concluded that "the proposed project poses some serious and complex water resource concerns" and "has the potential to severely impact some of Minnesota's premier water resources, located at the headwaters of the Minnesota River, during an extended drought."

146. David Soehren, a resident of Lac qui Parle County, objected to construction of Big Stone II because of its threat to environmental quality in the area. Mr. Soehren's primary concern is the water usage associated with Big Stone II. He noted that the proposal calls for an annual use of up to 5.9 billion gallons of water from Big Stone Lake, which represents 20% of the lake volume. He noted that there had been a marked improvement in the water quality of Big Stone Lake during the past 15 to 20 years, which he attributed in large part to a cooperative agreement that allows the dam regulation of the lake to be maintained one foot higher than it formerly was. He expressed concern that the proposed water withdrawal by the Big Stone II plant could seriously erode the water quality benefits that have already been realized. He indicated that the adverse effect would be magnified if there were extended periods of drought and pointed out that there would be significant potential impacts downstream of the lake. For example, he asserted that reduced flows to the Minnesota River could result in less dilution of discharges of waste water for downstream communities, including Ortonville, and could adversely affect 15,000 acres of shallow lakes in the Big Stone National Wildlife Refuge and the Lac qui Parle Wildlife Management Area. Mr. Soehren also expressed concern about the proposed use of up to 3.3 billion gallons of groundwater each year as an alternative supply for the plant. He urged that the Minnesota-Dakota Boundary Waters Commission be reconvened and that the Minnesota Department of Natural Resources and the Upper Minnesota River Watershed District be given more authority in the water permitting process for the Big Stone II proposal.¹⁴⁴

147. Friends of the Minnesota Valley, a private nonprofit organization whose goal is to conserve the natural resources of the lower Minnesota River watershed, opposed construction of Big Stone II. The group contended that the plant would deplete Big Stone Lake and its aquifer of 6.4 billion gallons of water per year and would lower the lake up to five inches. They asserted that this would have a dramatic effect on the

¹⁴⁴ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 54-58.

Minnesota River, which has its source in Big Stone Lake, by exacerbating already critical pollution problems and increasing mercury emissions.¹⁴⁵

148. Scott Kudelka of the Minnesota River Watershed Alliance noted that he was opposed to the construction of Big Stone II and the draw-down of Big Stone Lake, and expressed concerns about mercury and carbon dioxide emissions from the plant.¹⁴⁶ Emily Wright of Montevideo expressed concern about mercury emissions from Big Stone II and the amount of water the plant would use.¹⁴⁷ Dennis Kassube, who lives on Big Stone Lake, indicated that he did not believe the area has enough water to support Big Stone II.¹⁴⁸ Lucy and Gene Tokheim of rural Lac qui Parle County objected to the adverse effects of the Big Stone II plant on water resources, including the draw-down associated with the plant and the contamination of water by mercury emissions and coal combustion waste.¹⁴⁹

149. LaValle Berkner, an Ortonville resident who has lived on Big Stone Lake and has operated an excursion boat on the lake, testified that there has never been any problem with respect to the level of the lake, in dry years or in wet years. He has had a good relationship with Otter Tail Power and supports the project.¹⁵⁰

150. Mark Rolfes, Project Manager, asserted that the same restrictions would apply to the proposed Big Stone II project as currently apply with respect to when water can be taken from Big Stone Lake and the way in which it can taken. Mr. Rolfes indicated that water can be taken whenever the lake's water level is high, which is defined by statute to be when it is above 967 feet (regardless of what time of year that occurs). He noted that, the higher the lake level is, the faster they can draw water from the lake. He stated that the plant would not take 218 acre feet a day from the lake, because that would not be physically possible. Mr. Rolfes asserted that, based upon testing and modeling, the groundwater that feeds Big Stone Lake would not be affected even if they pumped for a long period of time at maximum rates.¹⁵¹

151. Darrell Gerber and Mary Jo Stueve, Program Coordinators for Clean Water Action, filed additional comments on January 15, 2008, questioning the accuracy of Mr. Rolfes' statements. They asserted that the Big Stone II plant would in fact have authority to draw off water when the water levels on Big Stone Lake were low and contended that Big Stone I had, in the past, drawn water when the lake level was as low as 965 feet. They asked that the Administrative Law Judges recommend to the Commission that the Minnesota-South Dakota Boundary Waters Commission be convened before a decision is made on the Applicants' Certificate of Need petition. They also requested an additional public hearing and an extended period for public comments, with notice required to be placed in local papers surrounding Big Stone Lake

¹⁴⁵ Letter from Friends of the Minnesota Valley (Jan. 7, 2008) (Public Ex. 16C).

¹⁴⁶ Letter from Scott Kudelka (Jan. 10, 2008) (Public Ex. 16D).

¹⁴⁷ Letter from Emily Wright (Public Comments received by E-Mail).

¹⁴⁸ Letter from Dennis Kassube (Public Comments received by E-Mail).

¹⁴⁹ Letter from Lucy and Gene Tokheim (Public Comments received by E-Mail).

¹⁵⁰ Ortonville Public Hearing, Jan. 10, 2008, Transcript at 108-110.

¹⁵¹ *Id.* at 140-142.

and sent to home owners on the lake.¹⁵² CURE supported the requests made by Clean Water Action. CURE suggested that the convening of the Boundary Waters Commission be a condition required to be met before the Certificate of Need can be granted.¹⁵³

152. By letter dated January 22, 2008, the Administrative Law Judges denied the above requests made by Clean Water Action and CURE. They determined that issues relating to water draw-down were not relevant to the limited issues involved in this recommenced proceeding and that the PUC would, in any event, lack authority to order the Minnesota-South Dakota Boundary Waters Commission to convene.

VI. OES Recommendation and the Applicants' Response

153. The Office of Energy Security concludes that MRES's satisfactory demonstration of its and HUC's need for 160 MW of Big Stone II and OTP's demonstration of its need for 170 MW, assuming OTP's assumptions are correct, together with the regional need for energy, demonstrates the need for the transmission lines. Then, citing what it calls the "significant uncertainty" regarding Big Stone II, the Office of Energy Security objects to making OTP's ratepayers bear the risk of higher energy prices in the event that its assumptions turn out to be inaccurate. They say that shifting such risk to OTP ratepayers is simply unfair and that there was no reasonable opportunity for the Office of Energy Security to assess the reasonableness of OTP's modeling, although OTP had every opportunity to do so. They then recommend a set of conditions that would make clear that OTP, not its ratepayers, bears the risk in future cost recovery proceedings if OTP's assumed values as to future CO2 costs, fuel costs and fuel costs materially differ from the values OTP assumes in this supplemental proceeding. The Office of Energy Security's overall conclusions and recommendations are set forth in DOC Ex. 26 at 15-19.

154. The conditions the Office of Energy Security recommends with respect to OTP are:

155. As to transmission costs, an Order approving Applicants' certificate of need request should include as a condition that OTP bears the burden of showing in its subsequent cost recovery docket that the final cost of the transmission facilities is reasonable, especially if the final cost is higher than the Applicants' proposed cost, plus an allowance for inflation as specified by the Applicants' earlier analysis in this docket. Such an Order of approval also should require that the Applicants provide as part of its compliance filing upon such approval, a summary of the transmission cost and inflation factors with citations to this record to assist the Commission in a future OTP cost recovery docket.

156. As to carbon costs, an Order approving Applicants' certificate of need request for the requested transmission facilities should include as a condition that, if Big Stone II is constructed, OTP's ratepayers would be made

¹⁵² Letter from Mary Jo Stueve and Darrell Gerber (Jan. 15, 2008) (Public Comments received by E-Mail).

¹⁵³ Public Ex. 41.

responsible only for the amount of carbon costs included in OTP's models. Any carbon regulation costs higher than the amount in OTP's model should be the responsibility of OTP's shareholders. The approach gives credence to OTP's model. OTP should provide such costs in the compliance filing discussed above.

157. As to the existing coal generation facilities of Hoot Lake, an Order approving Applicants' Certificate of Need request should include as a condition that, if Big Stone II is constructed, OTP commits to shut down the Hoot Lake generating plant in 2017, as assumed by its model. The OES further recommends that the Commission's Order require OTP to file a compliance filing setting forth the steps, costs and timelines required to complete the shut down.

158. As to potentially material capital cost increases of the anticipated Big Stone II generating plant, an Order approving Applicants' Certificate of Need request should include as a condition either one of the following two options if Big Stone II is constructed:

159. OTP commits not to charge ratepayers for any capital costs of the Big Stone II generating facility above a level that equates to the Applicants' proposed plant cost as modeled by OTP. The Commission may or may not choose to add a 10% band to allow for inflation and normal construction cost fluctuations. OTP should provide such costs in the compliance filing discussed above; or

160. In the event OTP does not agree to cost caps such as those described in (i), above, the Order expressly find that the Commission provides OTP no guarantee of future recovery of capital costs of the Big Stone II generating facility and, instead, defers the entire issue of "just and reasonable costs" and recovery thereof to OTP's first rate case after Big Stone II becomes "used and useful" to ratepayers at which time OTP will bear the burden of showing that the costs of Big Stone II proposed by OTP for rate recovery are justified.

161. As to OTP's resource replacement plan, an Order approving Applicants' certificate of need request should include as a condition that if at any time, Applicants choose not to go forward with their specific baseload Big Stone II construction project, OTP must, shortly after the Applicants' decision is made, file an alternative plan (to Big Stone II) to acquire the level of baseload generation resources it has demonstrated as needed, in order to serve their Minnesota customers in approximately the same needed timeframe.

162. The OES also recommends conditions for all the Applicants regarding C-BED projects; renewable energy compliance of 25 percent by 2025 found in newly enacted Minn. Stat. § 216B.1691; conservation and DSM compliance regarding the 1.5 percent CIP standard found in newly enacted Minn. Stat. § 216B.241, subd. 1c; Big Stone Lake water use; and mercury emission mitigation. The conditions as to renewable energy and DSM compliance are intended to avoid a claim that, if Big Stone

II is built, the Applicants do not need DSM and renewable resources. The condition as to Big Stone Lake water use is intended to take into account concerns of other state agencies under Minn. R. 7849.0120, and the mercury abatement condition is intended to minimize the significant risk to Minnesota ratepayers of future additional costs Applicants may incur to purchase mercury allowances.

163. The Applicants provided the following response to the conditions proposed by the OES:

164. The Applicants do not object to including the terms of the Settlement Agreement as conditions of the Certificate of Need. However, they assert that the other conditions recommended by the Department should not be imposed.

165. The Applicants agree to set off the portion of the carbon dioxide emissions from Big Stone II attributable to their Minnesota customers under one of the mechanisms set forth in the Settlement Agreement. The Applicants have no objection to incorporating Section 4.0 of the Settlement Agreement into the Certificate of Need.¹⁵⁴

166. According to the Settlement Agreement, the offset can be accomplished by several methods including, among other options, greenhouse gas emission reductions at any of the Applicants' other plants, trading on a recognized greenhouse exchange, purchase of carbon credits, or setting aside \$10/ton of carbon dioxide emitted to be used for future greenhouse gas reductions and/or research.¹⁵⁵

167. The Applicants note that the carbon dioxide offsets required under the Settlement Agreement are consistent with the carbon dioxide offset requirements set forth in Minnesota's 2007 Next Generation Energy Act, and are more aggressive than any other offset condition imposed on any other utility's coal-fired generation plant in the United States. They are intended as a bridge until state or federal carbon management legislation is enacted.¹⁵⁶

168. The Applicants have no objection to incorporating Section 5.0 of the Settlement Agreement on mercury emissions into the Certificate of Need.¹⁵⁷

169. Even though the plant is located in South Dakota and is not subject to Minnesota regulation, the Applicants have agreed to control emissions of mercury from both Unit I and Unit II such that the emissions are equivalent to what is required of certain large generating facilities in Minnesota (i.e., Sherco and Clay Boswell) under the Mercury Emission Reduction Act of 2006 (Minn.

¹⁵⁴ Settlement Agreement, ¶¶ 4.1-4.11; see also App. Ex. 124 at 20-21 (Uggerud).

¹⁵⁵ *Id.*

¹⁵⁶ App. Ex. 124 at 21, lines 7-10 (Uggerud).

¹⁵⁷ Settlement Agreement, ¶ 5.0; see also App. Ex. 124 at 21-22 (Uggerud).

Stat. §§ 216B.68 to 216B.688), and which will most likely result in the removal of at least 90 percent of the mercury emitted from both of the units.¹⁵⁸

170. The Applicants have no objection to incorporating Section 6.0 on the protection of Big Stone Lake into the Certificate.¹⁵⁹

171. The Applicants have no objection to incorporating Section 7.2 on community based energy development into the Certificate.¹⁶⁰

172. The Applicants have no objection to incorporating Sections 8.1 to 8.4 on energy efficiency and conservation into the Certificate, with an adjustment of the June 1, 2008 reporting date in Section 8.1 to reflect the passage of time.¹⁶¹

173. The Applicants do not support a condition suggested by the Department that restricts Otter Tail's ability to recover costs that exceed the present estimates for control of carbon dioxide or a condition that restricts Otter Tail's ability to include in its rates any capital costs that exceed the present day estimates. They contend that these recommendations lack legal or factual foundation and are beyond the scope of this proceeding. They assert that whether or not Otter Tail should be allowed to include certain costs in its rates can only be decided at a later time, in the context of a rate case proceeding.¹⁶²

174. The Applicants do not support a condition that takes away their right to rely on statutory provisions relating to conservation goals, and contend that the Applicants with Minnesota load will be doing everything reasonably necessary, in coordination with the Department, to comply with the statutory 1.5 percent savings goal.¹⁶³

175. The Applicants subject to the RES statute do not support a condition that takes away their right to seek an exclusion from renewable energy mandates under the proper circumstances. They assert that actually achieving a 25% goal in Minnesota will require overcoming obstacles that at this point are not yet fully known or understood.¹⁶⁴

176. While Otter Tail currently intends to retire the Hoot Lake Units, it does not support a condition that operation of Big Stone II is contingent upon the closure of these units.¹⁶⁵

Based on the foregoing Supplemental Findings of Fact, the Administrative Law Judges make the following:

¹⁵⁸ *Id.*

¹⁵⁹ App. Ex. 124 at 22, line 5 (Uggerud).

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² Doc Ex. 27 at 18-19 (Rakow).

¹⁶³ *Id.*

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

SUPPLEMENTAL CONCLUSIONS

1. Any of the foregoing Findings of Fact more properly designated as Conclusions of Law are hereby adopted as such.

2. The Minnesota Public Utilities Commission and the Office of Administrative Hearings have jurisdiction over this matter pursuant to Minn. Stat. §§ 216B.243 and 216E.03.

3. The Applicants have failed to demonstrate that their demand for electricity cannot be met more cost effectively through energy conservation and load-management measures, and the Applicants have not otherwise justified their need, as required by Minn. Stat. § 216B.243, subd. 3.

4. The Applicants have failed to demonstrate that they have explored the possibility of obtaining power from renewable energy sources and that Big Stone II is less expensive (considering environmental costs) than power generated by renewable energy sources, as required by Minn. Stat. § 216B.243, subd. 3a.

5. The Applicants' Petition for a Certificate of Need for the construction and operation of the proposed transmission lines in Western Minnesota should be denied and the Route Permits for the proposed transmission lines should not be issued.

Based upon the foregoing Conclusions, the Administrative Law Judges make the following:

SUPPLEMENTAL RECOMMENDATION

IT IS RESPECTFULLY RECOMMENDED THAT

1. The Minnesota Public Utilities Commission **DENY** the Applicants' Petition for a Certificate of Need for the construction and operation of the proposed transmission lines in Western Minnesota.

2. The Minnesota Public Utilities Commission **NOT ISSUE** Route Permits for the proposed transmission lines (a 230 kV line from the South Dakota border to the Morris Substation and a 230 kV line built to 345 kV standards, but initially operated at 230 kV from the South Dakota border to the Granite Falls Substation).

3. If the Commission does issue the Certificate of Need, it should impose the conditions recommended by the Office of Energy Security and issue the Route Permits requested by the Applicants.

Dated: May 9, 2008

/s/ Steve M. Mihalchick
STEVE M. MIHALCHICK
Administrative Law Judge

/s/ Barbara L. Neilson
BARBARA L. NEILSON
Administrative Law Judge

SUPPLEMENTAL MEMORANDUM

The geographic realignment caused by the withdrawals of Great River Energy and Southern Minnesota Municipal Power Agency from the Big Stone II generation and transmission projects in September 2007 is significant. GRE serves 28 cooperatives primarily along much of the eastern edge of Minnesota, and also into northwestern Wisconsin and southwestern Minnesota. SMMPA serves 18 municipal utilities primarily in south-central and southeastern Minnesota.¹⁶⁶ The remaining Applicants now serve areas mostly in western Minnesota, North Dakota, South Dakota, northwestern Iowa, and Montana. About 67% of Heartland's load is in Minnesota now, but that is expected to drop to less than 50% in 2016.¹⁶⁷

It is very difficult to imagine that such a geographic realignment would not cause a significant reassessment of the need for, if not the alignment of, the proposed transmission lines. Now most of the area to be served is to the west and north of Big Stone II and relatively little is to the east and south, where the proposed transmission lines go. It will be even less in the future. Yet, the Applicants' position is that the capacity and alignment of the original transmission lines is still justified by their reduced level of need, which is particularly reduced to the east.¹⁶⁸

It is true that there are other generators and buyers of energy that could be served by these transmission lines, and will be if the lines are built. But the needs of those entities are not the Applicants' needs and they have not been analyzed to determine whether they comply with Minn. Stat. § 216B.243, subds. 3 and 3a.

¹⁶⁶ Initial ALJ Report, Findings 5 and 11.

¹⁶⁷ See App. Ex. 21 and App. Ex. 59 (Knofczynski).

¹⁶⁸ The Applicants, OES, MISO, and many others support the proposed lines because they will be able to carry much of the wind energy to the east out of southwestern Minnesota and southeastern Minnesota. This is a large need that needs to be addressed with additional transmission. It is a factor that alone may justify some parts of the proposed lines. But it is not a factor in determining the Applicants' need for the lines. Moreover, the direction of transmission lines is not always critical because transmission lines may be delivering energy into the electrical grid, rather than point-to-point. Nonetheless, this case is about the delivery of energy from Big Stone II, where the proposed lines start, to the Applicants. It is possible that the grid should be strengthened to the north and west of Big Stone II instead of to the east.

It was established in the initial phase of this proceeding that the most reasonable method for analyzing whether the Applicants' claimed energy needs could be more economically provided by renewables, as opposed to by Big Stone II, is by use of resource planning techniques. This is because resource planning considers the integrated nature of the system and resulting effects on costs of various alternatives.¹⁶⁹ In the Initial ALJ Report, the Applicants were allowed some leeway in their examination of alternatives because the use of resource planning for this analysis was a new endeavor for all the parties. The Applicants had objected to its use at all. The recommencement of this case made it fair to expect the parties to strengthen their resource planning analyses.

All these considerations raise questions and require even closer scrutiny of the demand, resource planning, and other evidence offered by the Applicants, and other parties, in this recommenced phase than was given in the initial phase.

In the opinion of the Office of Energy Security:

OTP's assumptions and modeling are questionable, particularly in light of the lack of sensitivity analyses to test future costs such as the potential enactment of carbon regulation and materially increased capital costs. Given OTP's seeming reluctance to test the reasonableness of its assumptions against a range of potentially much higher future costs, and its use of a capacity expansion model that is not testable by the Office of Energy Security or other intervenors, the Office of Energy Security recommends specific conditions as an alternative method to address potential future ratepayers' impacts. These conditions pertain to OTP's future Big Stone II cost recovery in order to reasonably ensure that OTP ratepayer protection by ensuring that OTP, rather than ratepayers, is accountable for its own assumptions in its modeling and bears the risk in the event that OTP's cost and emissions assumptions are not realized. The conditions also ensure the realization of an assumption critical to OTP's generation modeling and showing of foundational baseload need -- that OTP will shut down the antiquated Hoot Lake generation plant by 2017. The conditions concerning cost recovery and rate impact that pertain only to OTP are important since OTP is the only Applicant that is rate regulated by this Commission, and "because OTP's customers are not necessarily OTP's shareholders in the manner of a cooperative or municipal utility. Unlike the risks and rewards for a cooperative or municipal utility, for OTP the risks and rewards cannot be assumed to be shared equally between the two groups."¹⁷⁰

The Office of Energy Security's approach may be the most practical solution. The proposed transmission lines are needed to some degree, and to the extent it is relevant, Big Stone II promises to be one of the most efficient and least polluting coal

¹⁶⁹ Rakow Direct Testimony of November 17, 2006, at 11-13.

¹⁷⁰ DOC Ex. 27 at 15 (Rakow).

plants yet built. It will even reduce pollution from Big Stone I. But the ALJs are unable to conclude that the statutory requirements have been met. Although the Applicants claimed they needed 500 MW or more, they have proven a need for at most 160 MW. Making one of them subject to conditions to compensate for some of their shortcomings does not cure the failure to meet the statutory requirements. A recommendation to approve the Certificate of Need would render the statutory requirements meaningless. Moreover, because the Applicants are not willing to accept those conditions, enforcement of those conditions by the Commission would be difficult.

S.M.M./B.L.N.